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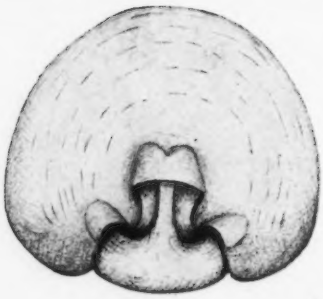
Offerata, rare species of North American Coleoptera. *Lack full set.

The Snow Collections, University of Kansas, Lawrence



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CHAMBERLAIN ON SCHIZOCOSA CELERIOR.

1. OPENINGS OF SPERMATHECA. 2. PALPAL ORGAN.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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A New Lycosid from Nevada.

By RALPH V. CHAMBERLIN.

(Plate I)

Three species belonging to the genus *Schizocosa* have heretofore been known; namely *ocreata* Hentz, *saltatrix* Hentz and *bilineata* Emerton. *Ocreata* and *saltatrix* range from New England south to the Gulf of Mexico and westward into the Mississippi valley; while *bilineata,* having the same range westward, appears not to have been recorded from south of the District of Columbia. The author was much interested at finding a fourth species in the Great Basin region during the past summer (1909). The new species possesses all the characteristic structural features of the genus as drawn from the previously known forms. In general aspect it most suggests *ocreata,* though in coloration it is more like *bilineata.* The structure of the genitalia of male and female is clearly distinctive. The male agrees with these of *ocreata* and *bilineata* in having on the anterior tibiae a dense covering of black

hair which stands out upon the surface like the bristles on a brush, a peculiar feature, the signifiance of which is at present wholly problematical. *Saltatrix* (the male of which Hentz figures as (*venustula*) is thus alone in the genus in lacking this brush-like structure. In the new species the femur, patella and metatarsi, as well as the tibia, have the tegument black. The following key may facilitate the separation of the four species.

MALES.

1. First tibia clothed densely with black hair standing out in brush-like form . . . . . 2.
   First tibiae not so clothed . . . . . **saltatrix** Hentz.
2. Legs all distinctly annulate; sternum dark . . . . . **ocreata** Hentz.
   Legs not all annulate; sternum yellow . . . . . 3.
3. Tegument of femur, patella and metatarsi as well as tibia, of anterior legs, black; metatarsus of fourth legs distinctly annulate with dark . . . . . **celerior** sp. nov.
   Tegument of femora, patella and metatarsus of first legs not so colored; metatarsus of fourth legs not distinctly annulate with dark . . . . . **bilineata** Emerton.

FEMALES.

1. Sternum yellow, either with or without two rows of dark spots converging caudad .. . . . . 2.
   Sternum dark, reddish brown to black . . . . . 3.
2. Cephalothorax more than 4 mm. long; metatarsi of fourth legs distinctly annulate with black . . . . . **celerior** sp. nov.
   Cephalothorax less than 4 mm. long; metatarsi of fourth legs not annulate, all legs without annulations . . . . **bilineata** Emerton.
3. Guide of epigynum much wider immediately in front of transverse arms than between anterior and posterior divisions of these arms; anterior portion of septum not sinuous....**ocreata** Hentz.
   Portion of guide or septum between anterior and posterior divisions of transverse arms much wider than immediately in front of arms; septum sinuous or bent near anterior end.
   saltatrix Hentz.

Schizocosa celerior sp. nov.

Female.—Cephalothorax with a rather narrow blackish brown stripe in the tegument each side and meeting its fellow across the face; eyes surrounded with black; the lateral dark lines leave between them a median longitudinal band of yellow which extends cephalad as a narrow tongue between eyes of second and third rows behind the latter abruptly expanding to the width of the row, indented on each side a

little in front of the dorsal groove and then weakly narrowing to posterior border where it ends truncately and is limited by a black transverse marginal line; below the lateral dark bands the cephalothorax is yellow with, a little above each margin a black line which may not extend cephalad upon the pars cephalica, usually a row of small dark dots below this line and in some a few similar dots above it; clypeus marked below each anterior lateral eye with a trinagular black spot, the two tending to be confluent across the middle; the median and lateral light bands of the cephalothorax densely clothed in life with bright white or grey hair, that of the median band extending over the pars cephalica and down the face to the first eye row. Tegument of the chelicerae reddish brown, a dusky stripe down the interior face of each; clothed with light hair intermixed with darker bristles. Endites and labium yellow. Sternum and coxae of legs clear yellow, clothed in life with white or light grey hair. Legs yellow, without distinct annuli excepting on the metatarsi of the fourth legs, each of which bears a distinct black annulus at its distal end and less strongly marked ones at middle and at proximal end, though in some there are indications on femora of obscure annuli detectable under lens. Tegument of *abdomen* grey; black v-shaped stripe on anterior face, one arm of which passes over each lateral angle upon lateral portion of dorsum, there immediately diffusing into a wider longitudinal band formed of black streaks and dots which form a mesh-work dorsally, but which ventrad become isolated and more and more sparse; these lateral dark bands extending caudad to the spinnerets leave a median dorsal light band in the anterior portion of which is a lanceolate dark outline from back of the middle of each side of which extends a dark line caudolaterad into the dark band, a similar pair of lines from apex forming a chevron mark which is followed caudad by several similar marks; the lines forming the lanceolate and chevron marks are more or less broken, and in the spaces between them are a number of small black dots; venter clear grey, without any markings; epigynum reddish; spinnerets yellowish; abdomen in life clothed chiefly with white or light grey hair.

Chelicerae in length once and a fourth the height of the *face*.

First row of *eyes* much shorter than the second, strongly procurved, the dorsal edge of each lateral eye being ventrad of the centers of the middle ones; anterior median eyes not fully their radius apart, a little closer to the lateral eyes; anterior lateral eyes about three-fourths as large in diameter as the median. Anterior lateral eyes their diameter from anterior margin of clypeus. Eyes of second row some less than their diameter apart. Cephalothorax about 3.25 times as long as the quadrangle of posterior eyes.

Lower margin of furrow chelicerae armed with three teeth, of which

the first is commonly much reduced or sometimes wholly absent; the upper margin with three teeth as usual.

Legs rather long, the distal joints of posterior legs slender. Anterior tibiae armed beneath with the usual three pairs of spines, the relative lengths being much as in typical *Pardosas;* the distal pair short, the median and basal very long, their lengths being double the diameter of the joint and the proximal overlapping the median pair.

Epigynum short. The septum short and wide, showing clearly a division into a narrow median part and broad lateral alae. The posterior division of transverse arms relatively very broad, and the incisions from ends of arms extending acutely mesad between these broad divisions and the alar portion of septum. Openings of the spermatheca plainly showing. See Plate I, Fig. 1.

Length of cephalothorax 4.5 mm.; width, 2.5 mm.

Length of leg I, 12 mm.; tibia plus patella, 4 mm.; metatarsus, 2.5 mm.

Length of leg II, 10 mm.

Length of leg III, 9.7 mm.

Length of leg IV, 15 mm.; tibia plus patella, 4.7 mm.; metatarsus 4.1 mm.

Male.—Coloration nearly as in the female; the sternum more commonly with a row of three black dots near each lateral margin, one dot lying opposite the interval between each two coxae; the ground color of abdomen darker, of a more reddish cast, and the lateral dark bands more nearly solid for entire length.

Anterior legs with the tegument of femora, patellae, tibiae and metatarsi black, the patellae and tibiae and also part of the metatarsi also densely clothed with black hair that stands out in brush-like form.

For structure of palpal organ see Plate I, Fig. 2.

Length of cephalothorax, 3.3 mm.; width, 2.3 mm.

Length of leg I, 10 mm.; tibia plus patella, 3.5 mm.; metatarsus, 2.4 mm.

Length of leg II, 9 mm.

Length of leg III, 8.7 mm.

Length of leg IV, 15 mm.; tibia plus patella 4.1 mm.; metatarsus, 4. mm.

Locality—Southern Nevada (Las Vegas).

Individuals of this species were observed in large numbers running across a footpath along a small stream at Las Vegas. They seemed especilly active after sunset, coming forth at that time from concealment. At the date of observation (early June) both males and females were common. No females with egg-sacs were taken.

New Species of Pogonocherus, with Synoptic Table.

By H. C. FALL.

Four species of this genus—*negundo, arizonicus, californicus* and *alaskaus*—have been more or less recently described by Mr. Schaeffer. Three more are made known in the present paper—bringing the number of known forms within our faunal limits up to twelve. As only the five of the Henshaw List were known when Leng and Hamilton presented the last synoptic table (Trans. Am. Ent. Soc. 1896, p. 135) a new table is herewith appended.

P. obscurus n. sp.

Moderately stout, black, clothed not very densely with appressed blackish and ashy grey hairs, the latter predominating, especially in a slightly antemedian discal area which extends forward laterally to the humeri; the elytra with four series of small black tufts of short erect hairs, the inner series close to the suture, the three outer ones occupying the positions of the costae, which, however, are feebly or scarcely evident in this species. Entire body above, antennae, legs and sides of abdomen clothed with long flying hairs, which are for the most part blackish on the upper surface and pale beneath. Antennae one-third longer than the body in the male, slightly longer than the body in the female, the longer joints in great part pale, the outer ones black in apical half; scape more than four times as long as wide. Prothorax about as long as wide, lateral tubercles obtuse, discal ones moderate. Legs black, the tibiae variegated with pale hairs. Last ventral segment rounded at apex in the male, truncate with the apex beveled or obliquely ascending in the female. Length 7-9 mm.; width 2.6-3.4 mm.

Described from 2 ♂'s and 1 ♀ kindly given me by Mr. Schwarz, who took them at Bright Angel, Arizona.

This species is rather closely allied to *negundo*, but is readily separated by the tabular characters. It is perhaps even closer to *californicus*, but as this latter is compared by its describer with *oregonus*, I have so associated it in the following table. There is before me a specimen taken by Dr. Fenyes in the San Bernardino Mountains of California, which I refer with some confidence to *californicus*. It is very near *obscurus*, but the long hairs are shorter and less numerous throughout, and all those arising from the antennae are white, while in *obscurus* they are brown and white, the brown predominating.

P. propinquus n. sp.

Piceous, elytra variegated with testaceous, somewhat thinly clothed with brown and grayish white recumbent hairs, the latter, however, condensed in a fascia at the anterior third of the elytra, running obliquely forward exteriorly to a point beneath the humeral umbone, but not reaching the side margin. The fascia is sharply defined posteriorly, but anteriorly merges into an area of pale hairs within the humeri. Behind the fascia the surface is irregularly variegated with pale and dark shades, the paler color predominating toward the apex. Entire upper surface with scattered longer erect blackish hairs, the legs and antennae with hairs of moderate length. Antennae as long as the body (♀), joints pale at base, the scape nearly three times as long as wide. Prothorax slightly transverse, lateral and discal prominences moderately strong, but not acute, median line with a small oval polished tubercle at posterior third. Elytra tricostate, the lateral costae strong, the inner one much less so and bearing a series of four tufts of short erect black hairs, disk sparsely moderately punctured between the costae; elytral apices emarginate, the outer angle more distinct than the inner. Femora black, pale at base; tibiae annulate; basal joint of hind tarsi nearly as long as the next two. Abdomen without erect hairs, last segment (♀) with a transverse apical fovea. Length 9 mm.; width 3 mm.

San Bernardino Mountains, California, 6200 feet. A single female collected by Mr. Joseph Grinnell. This species is rather closely allied to *penicellatus,* but sufficiently distinct by the lateral costa subinterrupted at base, and by the different disposition of the pale markings.

P. pictus n. sp.

Closely related to *mixtus,* and hitherto regarded as a form of that species. It seems to differ constantly from the latter in the denser whiter sub-basal area which broadly reaches the suture but fails to attain the side margin; the dark areas are also blacker and contrast more strongly with the white markings. The elytra are more evidently subcostate than in *mixtus,* the lateral costa being quite well marked though obtuse, and the antennal scape is as a rule shorter and more thickened apically, being but slightly more than twice as long as wide. The size is little greater than in the average *mixtus.* Three specimens are before me bearing labels as follows: "Telluride,

Colorado," 9000 feet; "Colorado," and "Cloudcroft, New Mexico." There is a single example, labeled simply "Col." in the Le Conte collection and placed with *mixtus*.

This is evidently the form referred to by Hamilton ("Trans. xxiii, p. 135) as Le Contes *simplex;* an erroneous determination, however, the true *simplex* being in no appreciable way different from typical *mixtus*. In the original description of *simplex* the apices of the elytra are said to be rounded, but a recent examination of the type by the writer shows them to be truncate and feebly sinuate, the sutural angle slightly prominent.

The following table is offered for the separation of the twelve species now known to us:

SYNOPTIC TABLE.

Elytra each with a strong subbasal discal crest; sides of body and legs with long flying hairs, antennae with moderate hairs; outer apical angle of elytra spiniform. 7–9½ mm. California; Vancouver Island . . . . . **crinitis** Lec.

Elytra not or but feebly cristate at base.

Legs and antennae with long flying hairs; apex of elytra rounded.

Lateral tubercle of prothorax acute, spiniform. 5–8 mm. Lower California . . . . . **volitans** Lec.

Lateral tubercle of prothorax obtuse.

Elytral disk with yellowish brown area which extends forward laterally to the humeri, and posteriorly as a gradually narrowing sutural stripe nearly to the apex; last ventral of female foveate at apex. 9.5 mm. Arizona . . . . . **negundo** Schaef.

Elytral disk with a somewhat diffuse grayish area just before the middle, not extending backward along the suture; apex of last ventral of female broadly obliquely ascending or beveled but not foveate. 7–9 mm. Arizona. . . . . **obscurus** n. sp.

Legs and antennae without long flying hairs.

Elytral apices rounded.

Elytra and prothorax clothed uniformly with gray pubescence, with a few small tufts of short black hairs on the elevated intervals. 6¼ mm. Tulare Co., Cal. . . **californicus** Schaef.

Elytra clothed with gray pubescence in about basal half and apical third, the intermediate area forming a broad transverse black fascia. 8–9 mm. Idaho, Oregon, California . . **oregonus** Lec.

Elytral apices emarginate, with more or less distinct limiting angles.

Elytra each tricostate, the lateral costae strong, the inner one feebler and bearing a series of four or five tufts of erect black hairs.

Lateral costa strong throughout, the antemedian pale spot or fascia sharply defined and not extending forward within the humeri . . 4½–6 mm. Maine to Colorado. . **penicellatus** Lec.
6 mm. Alaska . . . . . **alaskanus** Schaef.

Lateral costa feeble or subinterrupted near the humerus; anterior pale area less sharply defined, reaching the base within the humeri. 9 mm. San Bernardino Mts., California.
propinquus n. sp.

Elytra without strongly marked costae.

Fulvous, thorax and elytra at sides with some darker spaces, each elytron with an anterior oblique pale fascia and behind this a row of three tufts of erect black hairs. 13 mm. Arizona.
arizonicus Schaef.

Brownish or piceous elytra without tufts of erect hairs.

Subbasal pale area denser, not reaching side margin, antennal scape stouter, elytra subcostate. 5½–7 mm. Colorado, New Mexico . . . . . **pictus** n. sp.

Subbasal pale area reaching side but usually not the suture; scape less stout, elytra not costate. 4–7 mm. Greater part of United States . . . . . **mixtus** Lec.

According to Schaeffer *alaskanus* differs from *penicellatus* in its "much darker color, the rounded apical angles of the elytra and the shorter first joint of the hind tarsi." The outer apical angle of the elytra is more or less completely rounded in some specimens of *penicellatus* and as no comparative measurements are given of the basal joint of hind tarsi, the characters seem rather too vague to incorporate in the table.

The length given for *arizonicus*—13 mm.— is very great for a species of *Pogonocherus* and is possibly an error.

Penicellatus, alaskanus, propinquus and *arizonicus* agree among themselves and differ from all others in having a small smooth oval tubercle on the median line of the pronotum posteriorly. The first three further agree in having the elytra rather strongly costate and with a single subsutural row of tufts of short erect hairs. *Arizonicus* has a single row of such tufts, but the description does not say whether they are near the suture or not, nor does it mention any elytral costae; and since it is compared by its author with *mixtus*, the presumption is that the elytra are without distinct costa as in that species.

Secondary sexual characters in this genus are chiefly manifest at the abdominal apex. The last ventral of the male is not modified, the apex broadly rounded. In the female of all the species known to me except *crinitus* the last ventral is either foveate or obliquely ascending at apex, the margin more broadly rounded or truncate. In Mr. Schaeffer's description of *negundo* the apex of the last ventral is said to be broadly emarginate in the male and broadly rounded in the female. It is probable that he mistook the sexes and the characters should be reversed. Le Conte says of *mixtus*—"The male has the thorax finely rugose," and of *parvulus* (merely a small *mixtus*) "the thorax of the male is finely rugous, that of the female smooth." Hamilton says that the thorax of the male (*mixtus*) is very closely aciculate, that of the female smooth. These differences are not at all apparent in my own series, and I am forced to consider them imaginary; in fact I find that the two specimens of *parvulus* upon which Le Conte's observations were made are both males. The antennæ are as a rule but little longer in the males than in the females.

The greater number of our species of this genus are known to occur on pines. *Crinitus* is found on live oaks, *negundo* on box elder, and *volitans*—from Lower California—can hardly occur on conifers. These three species, moreover, differ from all following by the more strongly developed and acute lateral tubercles of the prothorax.

Supplementary note on *Pogonocherus*.

Since submitting the above to the NEWS, there has appeared an article by Mr. Schaeffer in the September issue of the Journal of the New York Ent. Soc. containing a table of the species of *Pogonocherus* together with the description of still another new species—*concolor*—with doubtful locality but supposedly from California. I am unable to determine with certainty where *concolor* should go in the above table. Mr. Schaeffer does not say whether the lateral tubercle of the prothorax is acute or obtuse, but assuming that it is obtuse as in the greater number of species, and that the erect hairs of the antennæ and legs are not conspicuously long, it would be associated with *oregonus* and *californicus*, from both of which it is at once distinguishable by its uniform yellowish cinereous coloration and the absence of elytral tufts of setae.

Two New Cecidomyiidae.

By E. P. Felt, Albany, N. Y.

Lasioptera tripsaci n. sp.

This dark brown, white-banded species was reared at Plano, Texas, August 12, 1909, from larvae occurring between the leaf blades of Gama or Sesame grass, *Tripsacum dactyloides*, and transmitted to this office by Prof. F. M. Webster under the number of 6,011. This species is easily separated from allied forms by the white margined abdominal segments, the unicolorous tarsi, the 18 antennal segments, the fifth with a length three-quarters its diameter and the extended ovipositor, the latter being nearly as long as the abdomen.

Larva.—Length 3 mm., pale yellowish orange. Head small, narrowly rounded anteriorly. Antennae short, apparently uniarticulate. Breastbone bidentate, the teeth widely separated, small, the shaft weakly chitinized. Skin coarsely shagreened. Posterior extremity produced as a conspicuous pair of fleshy, conical pseudopods.

Female. Length 2 mm. Antennae fuscous yellowish, lighter basally; 18 segments, the 5th with a length barely three-quarters its diameter, the terminal segment produced, evidently composed of two closely fused. Palpi; first segment broadly oval, the second a little longer, narrowly oval, the third as long as the second, more slender, the fourth a little longer and more slender than the third. Mesonotum dark yellowish brown. Scutellum fuscous yellowish, postscutellum yellowish. Abdomen dark brown, the segments narrowly margined posteriorly and laterally, venter concolorous; ovipositor yellowish. Wings hyaline, the third vein uniting with costa at the basal half. Halteres yellowish. Coxae fuscous yellowish, femora lighter, tibiae lighter than the coxae, tarsi pale straw, the distal segments fuscous; claws stout, evenly curved, the pulvilli a little shorter than the claws. Ovipositor nearly as long as the abdomen, stout, the terminal lobes with a length three times the diameter, tapering, thickly setose, minor lobes long, slender.

Type Cecid. a2013, N. Y. State Museum.

Cecidomyia opuntiae n. sp.

This species was reared during June, July and August, 1909, from discolored areas accompanied by more or less decay, at the base of spines on *Opuntia* leaves received from

George V. Nash, head gardener of the New York Botanical Gardens at Bronx Park, N. Y. Apparently the eggs are deposited at the base of a spine, possibly near some recent wound and the larvae commence operations upon the tissues, their work being followed by decay and in some instances by the operations of a small *Ptinid* beetle belonging to the genus *Catorama*. In the latter case the dead tissues are traversed by irregular galleries, the *Cecidomyiid* larvae being in the near ing vicinity of living cells. This species occurred in New York in the leaves of *Opuntia banburyana* from Italy and an *Opuntia* from British West Indies. It is probably American and presumable that the infestation originated in this country. The deep red male may be recognized by the short broad, triangularly emarginate ventral plate.

Larva.—Length 3 mm., deep red, rather stout. Head small; antennae long, tapering, biarticulate; breast-bone stout, bidentate, the teeth divergent, broadly rounded, the shaft well chitinized. Skin coarsely shagreened. Posterior extremity broadly rounded with submedian conical processes.

Male.—Length 1 mm. Antennae about as long as the body, thickly haired, dark brown; 14 segments, the fifth binodose, the basal portion of the stem with a length three-quarters its diameter, the distal part with a length one-quarter greater than its diameter, the basal enlargement subglobose, subbasal whorl sparse, the subapical circumfilum stout, the loops moderately long, the distal enlargement subcylindric, tapering basally with a length twice its diameter, the subapical whorl sparse, the subbasal and subapical circumfili moderately stout, the loops moderately short; terminal segment with the basal stem very short, the distal enlargement with a length three and a half times its diameter. Palpi; first segment short, stout, the second with a length three times its diameter, the third one-third longer, more slender, the fourth a little longer and more slender than the third. Mesonotum dark reddish brown, the submedian lines thickly haired. Scutellum yellowish red basally, postscutellum dark brown. Abdomen thickly haired, deep red, dark brown basally, the membrane and pleurae fuscous. Wings hyaline, costa fuscous yellowish. Halteres pale yellowish, reddish tinted basally and apically. Coxae slaty brown, femora and tibiae pale straw, slightly fuscous. Tarsi with the first segment pale straw, the second and third fuscous yellowish, the fourth and fifth dark brown; claws slender, slightly curved, simple, the pulvilli nearly as long as the claws. Genitalia; basal clasp segment stout; terminal clasp

segment moderately stout; dorsal plate short, broad, triangularly emarginate, the lobes broadly rounded, sparsely setose; ventral plate short, broad, triangularly emarginate, the lobes truncate, sparsely setose; style short, stout, tapering.

Female.—Length 2 mm. Antennae nearly as long as the body, rather thickly haired, fuscous yellowish; 14 segments, the fifth with a stem about one-quarter the length of the cylindric basal enlargement, which latter has a length four times its diameter, is rather strongly constricted near the basal third; subbasal whorl sparse, subapical whorl scattering. smooth; circumfili rather strongly arched near the basal third and apically; terminal segment cylindric, with a length three times its diameter and a slender conical apex. Palpi yellowish, the first segment short, stout, the second subquadrate, with a length two and a half times its diameter, the third one-half longer, more slender, the fourth a little longer and more slender than the third. Mesonotum reddish brown, the submedian lines thickly haired. Scutellum orange yellowish, thickly haired, postscutellum dark reddish brown. Abdomen mostly dark brown, the segments rather thickly haired posteriorly, incisures and pleurae deep orange. Ovipositor yellowish, nearly as long as the abdomen when extended, the terminal lobes slender, tapering to a narrowly rounded, coarsely setose apex. Wings hyaline, costa fuscous yellowish, subcosta uniting therewith at the basal half, the third vein just before the apex. Halteres yellowish orange. Legs mostly dark brown, the coxae and femora basally yellowish; claws long, slightly curved, simple, the pulvilli nearly as long as the claws.

Type *Cecid.*, a1,975, N. Y. State Museum.

Three New Trypetidae from the Pacific Islands.

By D. W. Coquillett.

The following new species were received from Mr. Edward K. Carnes the Horticultural Examiner, at Sacramento, California.

Dacus facialis n sp.

Near *oleae* but the face unspotted in the male, while in the female the two antennal furrows are wholly black, in both there is no brown spot at the tip of the third vein, etc. Head opaque yellow, the middle of the front, the third antennal joint and the arista except at the base, brownish; an irregular blackish spot above the center of the occiput. Thorax yellow, the mesonotum except its sides black, gray pruinose except three vittae; a black spot on the pteropleura and one on lower part of the sternopleura; metanotum except its sides black, the middle usually yellowish; scutellum yellow, usually a median brown vitta.

Abdomen yellow, marked with three imperfect black vittae which are sometimes dissolved into spots, ovipositor black. Legs pale yellow, the tarsi except their bases brown. Wings hyaline, the first basal cell above the second, the stigma, the marginal cell and narrow border to the costa to slightly below the tip of the wing, brown; anal cell and a cloud on the apical portion of the sixth vein also brown. Length about 5 mm.

Tonga Island, Polynesia. Two male and four female specimens, bred from guavas. Type No. 12,737, U. S. National Museum.

Dacus virgatus n. sp.

Very near *facialis*, but differing as follows: Thorax black, the humeri, a stripe along the mesopleural suture and one over the hypopleura, bright yellow; mesonotum gray pruinose except two vittae; scutellum yellowish, the sides brown. Black vittae of the abdomen broad and continuous. Hind tibiae brown, the others tinged with brown. Costa of the wings not bordered with brown beyond the stigma. Length 7 mm.

Tonga Island, Polynesia. A female specimen bred from a guava. Type No. 12,738, U. S. National Museum.

Dacus melanotus n. sp.

Head and its members yellow, the middle of the front, third antennal joint, arista except at its base, the proboscis and palpi toward their apices, brownish; upper half of the occiput largely black. Body black, the humeri, a stripe along the mesopleural suture and one over the hypopleura, yellow. Legs brown, the bases of some of the femora and of the hind tarsi sometimes yellowish. Wings as in *facialis*. Length about 7 mm.

Cook Island, Polynesia. Two males and one female bred from oranges. Type No. 12,739, U. S. National Museum.

The American Exposition in Berlin during June, July and August promises great things. J. Pierpont Morgan is the President and His Royal Highness, Prince Henry of Prussia, is Honorary President of the German Reception Committee. The Entomological Congress will have some very distinguished personages as Patrons and Honorary Presidents. The President of the Congress will be Prof. Lameere, President of the Belgian Entomological Society. All American entomologists are invited to attend and become members of the Congress. Those persons desiring further information may obtain the same by applying to ENTOMOLOGICAL NEWS.

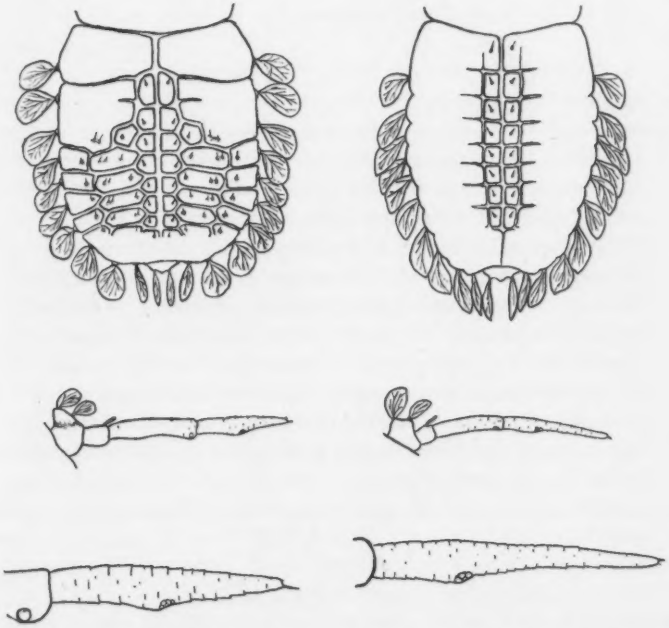
Chaitophorus negundinus Thos. vs. C. aceris Linn.

By JOHN J. DAVIS,
Office of the State Entomologist, Urbana, Illinois.

In ENTOMOLOGICAL NEWS for March, 1908 (Vol. xix, p. 131-132) Professor O. W. Oestlund gave a synopsis of the known life history of the dimorph of *Chaitophorus aceris* (*testudinatus* of Kessler) as worked out in Europe and suggested the possibility of *Ch. negundinis,* which produces dimorphs similar to those of *aceris,* being a synonym of the European species just mentioned. The dimorph of *Ch. negundinis* had previously been written about by Mr. L. C. Bragg in ENTOMOLOGICAL NEWS (Vol. xviii, Dec. 1907, p. 431-432), and later by the writer in the Annals of the Entomological Society of America (June, 1908, p. 130-32), in both cases the so-called box-elder aphid, *Ch. negundinis,* being considered distinct from the European maple aphids, *Ch. aceris,* et spp. At the same time I wrote to Dr. G. Del Guercio. sending him specimens of *negundinis* and requesting his opinion as to the distinctness of *aceris* (*testudinatus* of Kessler) and *negundinis.* He very kindly made a careful examination and reported the two species as distinct, and also sent me specimens of both the normal and the leafy dimorphic forms of *aceris,* together with sketches showing the variable dark patterns on the dorsum of the "normal" wingless viviparous females.

Dr. Del Guercio writes, "In *aceris,* * * * * one will always find it furnished with thin long hairs. The length of such hairs is about 20 microns and they lay about small tubercles, which are generally brownish, and distinct or indistinct, in a dark mass on the back. * * * *Ch. negundinis,* at least in those sent me, are furnished with rather rigid and short hairs, which measure 6 to 7 microns. This characteristic seems to me very important and less variable than any other in the two species." Following this suggestion I have examined all of the specimens of the winged viviparous females of *Ch. negundinis* in my collection and find the length of the

longest hairs does not exceed .16mm. and seldom are they that long, while the length of the similarly placed hairs on the winged specimens of *aceris* received from Dr. Del Guercio were usually .30 or .31 mm. The difference in lengths of hairs on the wingless forms is also noticeable, but much less



Chait. aceris, Dorsal surface abdomen.
Antenna.
Last antennal segment.

Chait. negundinis, Dorsal surface abdomen.
Antenna
Last antennal segment.

so than in the winged forms. Another characteristic which I find to be quite constant is the sensoria on antennal segment III of the winged viviparous female. In *aceris* there are 25 irregularly placed sensoria on III, while in *negundinis* there are but 7 or 8, which are more or less in a row. The rela-

tive lengths of the base and filament of antennal segment VI in the two species is quite distinct as is shown by the following average measurements:

Species	Form	Antenna				
		III	IV	V	VI base	VI filament
Ch. aceris	Winged viviparous female	.67	.42	.38	.13	.46 mm.
	Wingless " "	.63	.33	.31	.11	.36 "
Ch. negundinis	Winged " "	.41	.28	.22	.10	.24 "
	Wingless " "	.42	.27	.22	.11	.21 "

Further, there are no dark abdominal markings on the dorsum of the wingless females of *negundinis,* these markings being prominent, though variable, characters in *aceris.*

The dimorphic forms, of the two species under discussion, although having a remarkable resemblance, are likewise quite distinct. The dorsal "plates" are very different as is shown in figures 1 and 2. The leaf-like flabellae on *aceris* are usually rounded while those on *negundinis* in most cases at least, are more or less pointed. Another very prominent difference is the relative lengths of the base and filament of the last antennal segment (IV) as is shown in the following table and in figures 3, 4, 5 and 6:

	Antenna			Length of body	Width of body
	III	IV base	IV filament		
Dimorph of *Ch. aceris* Linn.	0.147	0.065	0.070	0.64	0.32 mm.
" *Ch. negundinis* Thos.	0.106	0.058	0.110	0.63	0.31 "

We have in America a *Chaitophorus* on the Norway and hard maples, which is very closely related to the European *aceris,* but which appears to be distinct—probably a variety of *aceris.* The writer wishes, however, to study the species throughout the year in its various forms before making any definite statements.

Concerning Dr. John B. Smith at Dublin, New Hampshire.

By HARRISON G. DYAR.

We dislike to take up space in scientific periodicals for purely personal discussions, but as the NEWS is not always strictly scientific and as such matters are generally lively and no doubt interesting to some of our readers we will comment on Dr. Smith's comments.

Dr. Smith is evidently "enjoying" the situation solely because his name was not mentioned in my article. The omission was intentional and made in the interest of accuracy. My examination of the territory and subsequent report were quite unifluenced by any expression of opinion on the part of Dr. Smith. It is easy for Dr. Smith to say, after the fact, that he pointed out the pond in question; but at the time he merely said that it had a favorable appearance. Owing to an unfortunate coincidence, following the regrettable action of Dr. Stowell in desiring an examination by Dr. Smith without my knowledge and before my own examination was completed, I was obliged to enjoy the pleasure of Dr. Smith's company on the tour of inspection of the ponds and marshes conducted by Dr. Stowell. The marsh in which I discovered the breeding-place of *Mansonia perturbans* was the only likely place that we saw on the trip, and if Dr. Smith had not been of the opinion that it looked favorable, he would have exhibited less acumen than I suppose him to possess. It is, however, a gratuitous assumption for him to imagine that my judgment was influenced in the least by his opinion. His company was forced upon me, his advice was not asked, and any acknowledgment of his connection with the matter in my report would have been both superfluous and misleading. My idea of the giving of credit is that it is due in cases where some service has been rendered or some information given whereby the recipient has profited, and in such cases I always gladly give credit. But where expressions of opinion are voluntarily proffered, which coincide with views already held by the recipient, even when such opinion proves

later to have been well founded, it is clear to me that no acknowledgment is due. In the present case I am the more disinclined to make any mention of Dr. Smith in the matter, even to state that he expressed a favorable prognosis, because he was injected into a situation which I considered well in hand, quite without my previous knowledge or desire.

Dr. Smith states that all the information about *Mansonia perturbans* comes from himself or his assistant, Mr. Grossbeck. This is a most disingenuous statement. I happen to know that Mr. Brakeley made all the discoveries in the case and sent his voluminous notes freely to Dr. Smith, and I am astonished that Dr. Smith should attempt to divert credit to himself from a most generous and warm-hearted, if non-publishing, friend. For myself, who am neither generous, nor, I fear, at present particularly friendly toward Dr. Smith, the attempt to annex credit is explicable on the ground that Dr. Smith's point of view is too self-centered to allow him to read the situation in its true aspect.

Note on the Genus Phalaecus Stal.

By Dr. E. BERGROTH, Fitchburg, Mass.

In 1773 De Geer described and figured a large and remarkable Pentatomid from Surinam under the name *Cimex pustulatus*. Overlooking De Geer's description Stål described in 1855 a specimen of the same insect from an unknown locality under the name *Macropygium flavopustulatum*. Later, in 1862, he found that the species has only a superficial resemblance to the genus *Macropygium* and founded the new genus *Phalaecus* upon it, identifying it with De Greer's species. In 1872 he published some additional characters of the genus, among others "tarsi biarticulati?" This note of interrogation seems to indicate that his specimen was in poor condition, for the tarsi are really only two-jointed and very distinctly so. Up to the present date no more specimens of this rare insect had turned up, but in 1880 Distant described and figured from Central America what he considered a new species of *Phalae-*

cus, naming it *Ph. decoratus.* Having recently received a specimen of *Ph. pustulatus* De G. from French Guiana and, through the kindness of Mr. Distant, a cotype of his *Ph. decoratus,* I find that there is neither affinity nor resemblance between these two species which belong to widely different genera. Although Distant speaks of "the elevated meso and metasternum," neither of these sterna is elevated in *decoratus.* What Distant has taken for the meso-and metasternum is the basally depressed basal spine of the venter. It will not be out of place to give completer and more accurate data about these two genera.

PHALAECUS Stal.

Body broadly oval. Head small, distinctly narrower than apex of pronotum, sub-rhomboidal, a little exserted and broader than long, eyes not touching pronotum, postocular and anteocular part of equal length, lateral margins before the eyes slightly and broadly sinuate, juga longer than tylus, approaching but not quite meeting in front, blunt at apex, ocelli somewhat more distant from each other than from eyes, bucculæ, nearly reaching base of head, first antennal joint passing apex of head by about two-thirds its length and nearly as long as second joint, third joint longer than second and shorter than fourth, which is as long as fifth, rostrum reaching middle coxæ, first joint reaching base of head, second joint a little shorter than third and fourth combined, fourth shorter than third. Pronotum about three and one-half times broader than head, deeply sinuate at apex with a short transverse impression on either side behind the apical margin, which is not raised, lateral margins narrowly reflexed, very feebly rounded, lateral angles rounded, scarcely prominent. Frena reaching beyond middle of scutellum. Prosternum longitudinally fore coxæ. Metasternum sexangularly elevated in the middle, the elevated part tapering from base to apex and reaching the fore coxæ. Metasternum sexangularly elevated in the middle, the elevated part broadly emarginate behind for the reception of the ventral basal tubercle. Orificial sulcus straight, rather long, its anterior margin thickened. Hemelytra with the cost-

tal margin of corium strongly and acutely reflexed towards the base, apical margin straight, apical angle narrowly rounded, membrane with few veins. Abdomen much broader than hemelytra, almost the whole connexivum not covered by the hemelytra, the apical angles of the segments subrectangularly prominent, second ventral segment with a broad, flattened tubercle filling the posterior sinus of the metasternum, spiracula more distant from the lateral margin of the segments than from the apical margin. Tibiæ sulcated above. Tarsi two-jointed.

Phalaecus pustulatus DeG.

Shining, glabrous, above dark-ferruginous, beneath luteous, base of head and juga (except interior margin) yellow, pronotum with nineteen yellow spots arranged in three transverse rows, first row with 4, second row with 6, and third row with 9 spots, those of the third row more elongate and irregular, scutellum with 5 elongate basal spots, an irregularly v-shaped median marking, a lateral spot at the middle, and the apex yellow, corium with about 6 larger and several smaller yellow spots, conexival segments with a large median quadrate yellow spot, a duplicate spot at the base of the fore and middle acetabula, a single spot at the base of the hind acetabula, and spiracula black, ventral segments with an irregularly and diffusely infuscated sublateral transverse patch inside the spiracula, antennae, rostrum and legs luteous, apex of second antennal joint, less than apical half of third joint, more than apical half of fourth joint, and apical half of fifth joint black. Head impunctate, juga transversely wrinkled, antennae shortly pilose. Pronotum, scuttellum and corium rather sparingly punctured, the yellow spots impunctate. Underside smooth, except prosternum which is finely and sparsely punctured. Legs shortly setose. Length, ♀ 16 mm., width 10 mm.

DISDERIA n. g.

Body oblong-obovate. Head immersed to the eyes, one-third broader than its length, scarcely narrower than apex of pronotum, strongly sinuate before the eyes, rounded at apex, anteocular part twice longer than postocular part, juga longer than tylus and narrowly meeting in front of it, ocelli more than twice wider apart from each other than from eyes, bucculæ almost reaching base of head, rostrum reaching middle coxæ, first joint reaching base of head, second joint as long as third and fourth combined, fourth shorter than third,

base of antennæ visible from above, their first joint reaching a little beyond apex of head, third joint much shorter than second, fourth joint longer than second and shorter than fifth. Pronotum a little more than twice broader than head, moderately sinuate at apex, apical margin scarcely elevated, but with a series of punctures immediately behind it, lateral margins reflexed in the middle only, straight, lateral angles a little prominent. Scutellum with the apical part moderately broad, frena reaching beyond the middle. Prosternum on either side behind the apical margin with a transverse carina, the inner end of which is recurved. Neither mesosternum nor metasternum elevated. Orificial keel long, straight, gradually tapering towards the end. Hemelytra with the costal margin scarcely elevated towards the base, exocorium with a double row of punctures except towards the base where there is but a single row, apical margin slightly rounded, apical angle acute, membrane with numerous veins. Abdomen a little broader than hemelytra, the apical angles of the segments with a short acute spine, second ventral segment with a strong spine reaching the fore coxæ, the basal part of the spine depressed and subexcavated, the apical part laminately compressed, spiracula about equally distant from apical and lateral margin. Tibiae not sulcated above. Tarsi three-jointed.

Type.—*Phalaecus decoratus* Dist.

This genus is not closely allied to any of the other American genera having a basal spine to the venter. The *facies* is that of a *Mormidea*. The genus is named in memory of S. Disderi, whose biological "Observationes entomologicae" (1805-1809) on *Hemiptera* and other insects have fallen into undeserved oblivion.

Disderia decorata Dist.

Head, pronotum, scutellum and breast irregularly rather thinly punctured. Corium more thickly and regularly punctured. Venter smooth, the blackish sublateral band with strong scattered punctures. The first three antennal joints and the femora and tibiae dotted with brown. Connexivum yellow, the basal and apical segmental margins black. Male genital segment short, broad, arcuately sinuate.

A New Species of Aspidiotus.

By GLENN W. HERRICK.

(Plates II, III)

Aspidiotus mori n. sp.

Scale of female.—Quite large, 2-2½ mm. in diameter; circular, flat, thin and very inconspicuous with the edges closely applied to the bark. It is reddish-gray in color and very like the bark of the mulberry. The exuviae are bright yellow and central. A thin, white ventral scale is present.

Scale of male.—Like that of the female, except that it is smaller and elongated.

Female.—The body is circular with a long, pointed and very characteristic pygidium (Plate III, Fig. 1), reminding one of the pygidium of *Chrysomphalus perseae.* The pygidium is rather strongly chitinized and has one pair of prominent lobes, the median ones. These are well developed, nearly parallel on their mesal edges and quite close together. The caudal margins are rounded and the lateral margins slope sharply toward the first incision and are conspicuously notched about one-third of the distance from the apex. These lobes, in shape and general appearance, strongly resemble the median lobes of *A. forbesi.* There is a strongly curved, chitinous process at the inner base of each median lobe (Plate III, Fig. 3). The first incision is bounded on each side by a characteristic, club-shaped process, the inner one much the larger and more conspicuous. Two pore openings are present in the incision. The second incision is also bounded by two prominent club-shaped thickenings. There are two long, pectinae (furcated plates) in the first incision and three plates in the second. The spines, on the dorsal surface, are situated at the bases of the lateral margins of the median lobes and the very rudimentary second and third lobes. A fourth spine is situated about one-third of the distance to the penultimate segment and two more a little distance from the base of the pygidium. The ventral spines are a little laterad of these (Plate III, Fig. 3). The anal aperture is small and situated very low down below the apices of the two large club-shaped processes of the first incision.

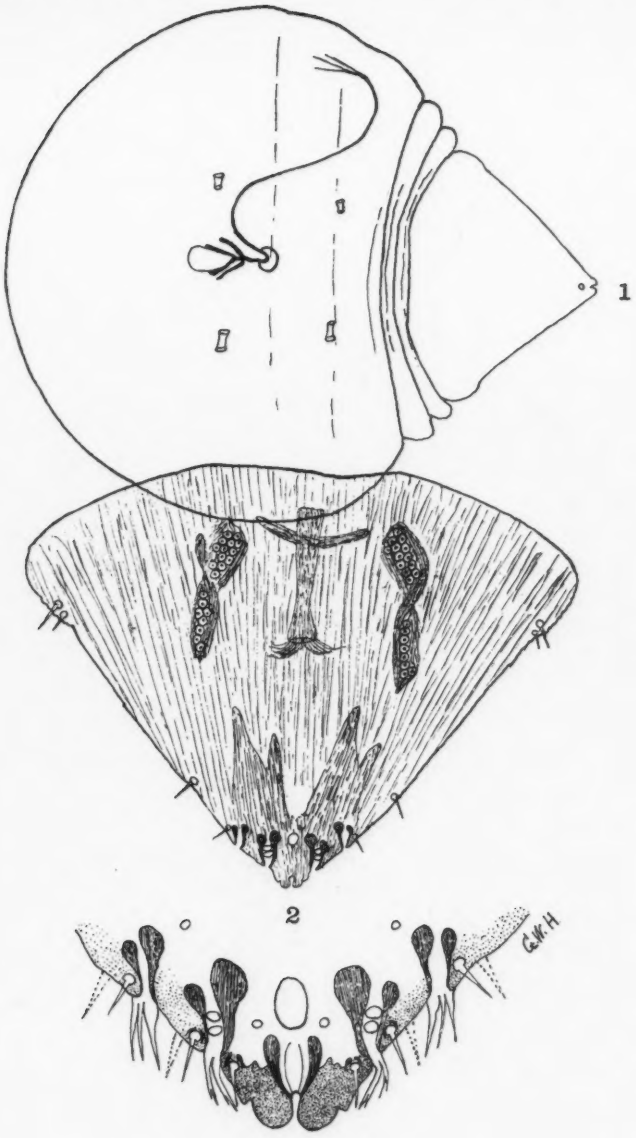
There were four groups of circumgenital pores (Plate III, Fig. 2) in all the specimens examined and they ran as follows in six average individuals:

13-14	11-12	15-13	15-11	12-12	11-14
8-7	9-8	9-8	7-8	7-8	10-9

The vaginal opening is conspicuous and is situated between the caudo-lateral groups of circumgenital pores. Described from many individuals.

Host plant.—On the undersides of the branches of native red mulberry trees (*Morus rubra*).

PYGIDIUM OF ASPIDIOTUS MORI HERRICK.



ASPIDIOTUS MORI N. SP.

1. BODY OF FEMALE. 2. PYGIDIUM.
3. MARGIN OF PYGIDIUM MUCH ENLARGED.

Locality.—Banks of the Brazos River, six miles from the Agricultural and Mechanical College of Texas, College Station, Texas.

Remarks.—The specimens were most abundant on the under sides of the lower branches of the trees which were subject to overflow and a great majority of the insects were dead as a result of the overflow of 1908. Some living females were present however, and one was found that had laid a number of nearly white or colorless eggs (May 4, 1909).

Records of Orthoptera from Western Canada.

By JAMES A. G. REHN.

The material from which the following records were taken was collected on several different trips; one made in portions of western Ontario, Manitoba, Saskatchewan and Alberta by Dr. Henry Skinner in the summer of 1906 in company with the late Dr. James Fletcher, who published an itinerary of the trip*; the other lot representing material collected incidentally on two botanical trips made in Alberta and British Columbia by Professor Stewardson Brown during the summers of 1906 and 1908.

The localities represented are as follows: Western Ontario, Nepigon; Manitoba, Aweme; Saskatchewan, Radisson, Rudy and Kinistino; Alberta, Banff and the upper Saskatchewan River; British Columbia, Field and Beavermouth.

The material is the property of the Academy of Natural Sciences of Philadelphia. Where no collector is mentioned the specimens were secured by Dr. Skinner.

ACRIDIDAE.

Acrydium brunneri (Bolivar).

Field.—June 26, August 1-2 (Brown). One male, two females. The male has a broad medio-longitudinal bar of ochraceous reaching from the fastigium to the apex of the pro-

* Rep. Ent. and Botanist, Canada Dept. Agric., 1908, pp. 186–188.

notum, the lateral angles also being narrowly outlined with the same color. The females are quite dull in color with a pair of more or less distinct trigonal blackish pronotal maculations.

The species has been recorded from Laggan.

Acrydium granulatum Kirby.

Field.—June 26, August 2 (Brown.) Two females. The June specimen is long-winged with the pronotum elongate, while the August individual has the pronotum and wings much shorter.

Chloealtis abdominalis (Thomas).

Radisson.—July 30. Three immature females. This is the most northern locality from which the species has been recorded.

Chorthippus curtipennis (Harris).

Radisson.—July 30. One immature specimen. Field.—August 1 and 2 (Brown.) Two males.

Gomphocerus clavatus (Thomas).

Radisson.—July 30, August 2. Five males, one female. Rudy.—July 19. Two males, two females. One of the Radisson specimens is in the greenish phase of coloration.

Previous Saskatchewan records of this species are from Moose Jaw (Caudell), Waldeck and Pasqua (Walker).

Mecostethus gracilis (Scudder).

Radisson.—July 30. One male. Dr. Fletcher (Rep. Ent. Soc., Ontario, 1907, p. 130) has recorded this species from the same locality

Arphia frigida Scudder.

Radisson—July 31. Seven males, six females. Rudy.—July 18. Two males, one female. Banff.—June 12, 1906 (Brown), August 2, 1907 (Skinner). Five males, four females.

All of these specimens have red wings, the Banff series having the disk more orange-red than the Saskatchewan in-

dividuals, while the sutural margins of the tegmina are without the pale edging in the Saskatchewan series and with the same in all the British Columbia representatives except one August male. Dr. Fletcher has recorded this species from Aweme, Manitoba, Rudy and Radisson.

Camnula pellucida (Scudder).

Radisson.—July 30. Two females. Beavermouth.—July 15, 1906 (Brown). One male, two females. This species has been recorded from several localities in British Columbia, Manitoba and Alberta, and from Indian Head, Saskatchewan.

Hippiscus tuberculatus (Palisot).

Kinistino.—July 25. One male. Three males and one female taken at Nepigon, Ontario, July 9, 1907, by Dr. Skinner have also been examined. This species has also been recorded from Calgary, Alberta, the Red River of the North, Great Slave Lake and the upper Mackenzie.

Hippiscus zapotecus (Saussure).

Rudy.—July 19. One female. Dr. E. M. Walker has recorded this species from Mill Valley, Manitoba, and Manitoba without further data.

Hippiscus latefasciata Scudder.

Aweme.—July 13. One male, three females. Dr. Fletcher (Rep. Ent. Soc., Ontario, 1905, p. 103) has recorded this species from the same locality The caudal tibiæ vary in these specimens from pale yellowish touched with pinkish internally to carmine with the external faces flesh color.

Hippiscus neglectus (Thomas).

Aweme.—July 13. One male. This specimen lacks the usual sutural stripe and is not quite typical in several other respects, but its separation without the evidence of additional material does not appear to be warranted. The only previous Canadian record for the species was from Fort McLeod, Alberta.

Trimerotropis monticola (Saussure).

Radisson.—July 30. One male, four females. These specimens are distinctly smaller than Nebraska and Colorado individuals, but the material in hand is too limited to make any deductions from it regarding the constancy of the size difference.

Circotettix suffusus Scudder.

Beavermouth.—July 15, 1906 (Brown). Two males, one female. Field.—August 2 (Brown). One male.

Melanoplus kennicottii Scudder.

Rudy.—July 18-19 (Skinner). One male, one female. This species has been recorded from the Souris River, but the present record is the first from the Province with exact data.

Melanoplus alaskanus Scudder.

Banff.—August 2 (Skinner). One male, four females. This is the first record of the species from Alberta.

Melanoplus atlanis (Riley).

Beavermouth.—July 15 1906 (Brown). One male.

Melanoplus extremus (Walker).

Field.—August 2 (Brown). Three males, six females. The series here examined belongs to the form *junius*. No previous records of the species from British Columbia appear to have been published, although it has been recorded from Banff and Beaver Lake, Alberta.

Melanoplus packardii Scudder.

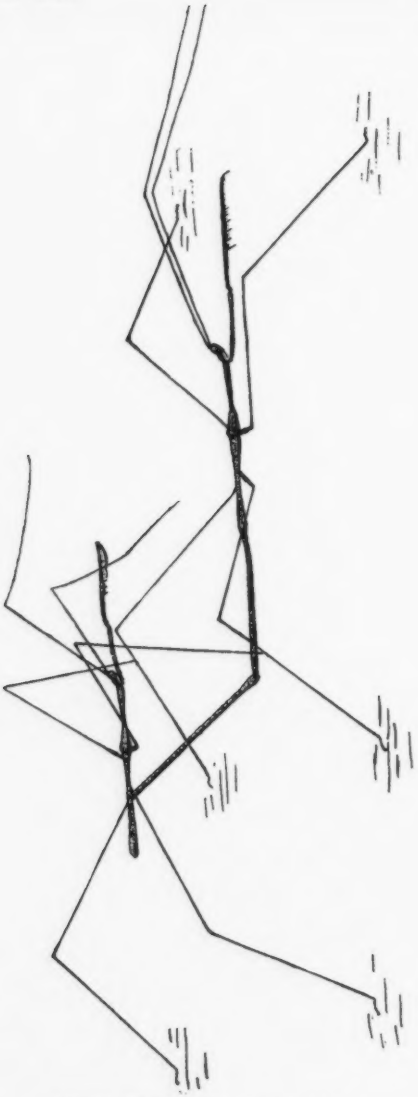
Radisson.—July 30 (Skinner). Four females. This species has previously been recorded from Regina, Saskatchewan.

Melanoplus infantilis Scudder.

Rudy.—July 19 (Skinner). One male, one female. Previous records of this species were from Medicine Hat and Fort McLeod, Alberta, and Regina and Moose Jaw, Saskatchewan.

Melanoplus minor (Scudder).

Rudy.—July 18 (Skinner). One male. This species has previously been recorded from Winnipeg, Manitoba.



EMESA LONGIPES (H. F. WICKHAM)

Melanoplus bivittatus (Say).

Rudy.—July 19 (Skinner). One female. Radisson.—July 30 (Skinner). Two males, two females. This species has been recorded from Medicine Hat, Alberta.

TETTIGONIDAE.

Cyphoderris monstrosa Uhler.

Saskatchewan River, below junction of North Fork, Alberta.—June 18, 1908 (Brown). One male. The only previous Canadian records of this species were from Banff, Alberta, and Ainsworth and Peachland, British Columbia. The present record is the most northern for the genus.

A Note on Emesa longipes.

By H. F. WICKHAM, Iowa City, Iowa.

(Plate IV)

Last year, I found occasion to make a few notes on the life history of the thread-legged bug,* and since the season just past has offered opportunities for some additional observations, they are brought together in this article as a contribution to the knowledge of the habits of a most unusual insect.

In my back yard was an old shed of considerable size, used long ago to shelter two or three cows. This shed was of rather loose construction, open more or less to the weather, with a dilapidated loft partly filled with lumber of various sorts and thoroughly dusty—rarely disturbed and thickly tenanted by spiders, wasps and such fry. The lower story was used principally to hold pieces of boards, old furniture and the like, while one compartment did duty through the winter as a coal bin. Trees of apple and elm shaded this ancient fabric, whose dusty rafters and web-hung walls afforded to many thread-legged bugs the quiet shelter that they seemed to enjoy.

Anticipating a threatened collapse of the structure I decided to tear it down, and in June began the task of dismantling it

*Ottawa Naturalist, Vol. XXII, March, 1909, p. 255.

piecemeal. This brought to view numbers of partly grown *Emesa,* sometimes resting singly, sometimes in little groups of five or six, while their cast skins could be seen hanging from rough spots on the boards. Early in July I left for the summer, and was unable to resume operations on the shed until the beginning of September, when I started work on a new building in the shade of a big walnut tree, only a few feet distant from the old site. Since the processes of destruction and construction went on more or less intermittently and coincidently I had some chance to note the behavior of the bugs from day to day. The colony was, of course, dispersed by the dismantling of their home, but some clung to the scattered timbers until the frosts came and ended their lives.

Unless disturbed, the bugs were not seen to move much during the middle of the day, but towards the end of the afternoon they would come out and fly slowly and awkwardly through the lane between the trees, their long legs and slender bodies retarding aerial progress despite the swift beat of the little wings. With the sun glinting against the coating of dust particles they made a curious and interesting sight—like nothing else that I have ever seen.

I was very anxious to see something of their feeding habits, since the published statements are somewhat vague or even contradictory. I did at last find one at rest upon a screen door, sucking a gnat about the size of the common mosquito of these parts, and it is probable that in general only small or fragile insects are attacked. Some of the numerous captive *Emesae* were seen to take juices from the bodies of dead flies and spiders with which they had been provided, but they were not seen to catch nor kill any of the living specimens of these insects which were put in with them. Eventually they fed upon their own kind, every morning I would find one or two dead bugs in the cage, one frequently serving as food to a living individual which was extracting the fluids by means of its short, sharp beak. I saw no evidence of attack, it may be that those dying of age or weakness were simply utilized as food by the survivors. Occasionally I saw free specimens of *Emesa*

at rest in spiders' webs, not entangled, but ready to move when disturbed, still I never saw any evidence of the spiders being attacked nor of other insects being taken from the webs. Twice, however, I noticed remains of *Emesa* in webs, one of which belonged to *Agalena*. The bugs had apparently been sucked dry, one of them chewed as well, the fragments being held together with bits of silk. Living specimens were seen out of doors as late as October 5, up to which date we had no heavy frosts.

The copulating habits of these emaciated beasts seem to be undescribed. Just before 8 oclock, on the morning of September 18, I found a pair of them on the kitchen screen. Union had already been effected when I came on the scene and lasted only about five minutes afterwards. In the meantime I had made some notes and a sketch which will give some idea of the curious pose assumed by the male. He stands upon his hind legs, some little distance behind the female, who is in her ordinary resting attitude, his middle legs cling by the tarsal claws to the hind legs of the female, which are grasped a little below the knee. The male abdomen is bent downwards at a sharp angle with the anterior part of the body, the tip overlapping the apex of the female abdomen on the left side. The front legs, in both sexes, are extended forwards, those of the male having the tibia folded back on the femur while in the female it is open. The female started to walk away, but the male was equal to the emergency being able to accompany her and yet to hold his position by tip-toeing on his hind feet and releasing the hind legs of the female alternately or both at once when she moved.

After the pair separated I put them into a large box in order to determine the number of eggs and the length of the period of deposition. The first were found on the morning of the second day after copulation and were either fresh laid or deposited during the preceding night. In all nineteen were produced the time consumed being between three and four days. The male died soon after, without, as far as I know, having resumed relations with his mate who used him as food and

may have been responsible for his death. A few days later she also died, and the eggs have been removed to the new shed in the hope of starting a colony to replace the old one, dispersed by the destruction of their home. It does not seem worth while to describe the eggs here, since they have already been briefly characterized in the article quoted, but it may be said that, as on former occasions, they were not laid in masses nor according to any system, but attached at random to the walls.

The Butterflies of San Francisco, California.

By Francis X. Williams, San Francisco.

San Francisco (in law the city and county of San Francisco) is situated at the north end of a peninsula about 30 miles long. It is roughly quadrate in shape, and occupies an area of about 42 square miles. A spur of the San Bruno Mountains, extending from the south into the city, reaches its highest point in Twin Peaks, over 800 feet above the sea level. The north and northwest shores, on the Straits of the Golden Gate, are quite precipitous and rugged, and still retain much of the native vegetation. Extending southwards from this point, and occupying a great part of the western half of the city, is a rolling country of sand dunes and brush, which, however, is becoming rapidly cleared for human habitation. In the southwestern corner of the county is the Laguna de la Merced, occupying a fertile valley near the ocean. Much of this land has lately been converted into truck gardens. Lobos Creek, skirting the southwestern edge of the Presidio, the military reservation to the north, is still somewhat undisturbed by humanity, but Lone Mountain, an isolated sandy hillock, the classical resort of *Lycaena xerces,* is situated too near the midst of the city to be left unmolested, and is frequently the scene of some autumnal grassfire, not very salubrious to the welfare of its now decimated insect population.

San Francisco in early times was a hilly and barren waste, with no large trees, but much scrubby growth. Dr. Behr says

(Fauna and Flora of California; Proc. Cal. Acad. Sciences, 2nd series, P. 368, 1895): "Up to the year 1856 a considerable part of the neigborhood (now the city) of San Francisco was covered by a Chaparral consisting almost exclusively of *Ceanothus thrysiflorus.* Part of this formerly impenetrable thicket has been removed by human agency, and to a great extent has been replanted by our California *Cupressus macrocarpa, Pinus insignis,* Australian *Acaciae* and *Eucalypti.*" Besides *Ceanothus* were large tracts of scrubby *Quercus agrifolia,* much *lupinus arboreus* and *chamissonis, Rhamnus californica, Baccharis pilularis, Ericameria ericoides,* etc. What remains of this growth is now practically confined to the western half of the city. Very little is left of the former large areas of *Ceanothus,* which at present is only found along the north and northwestern cliffs, and there in small patches. The other shrubs are still plentiful. As a consequence the insects are disappearing along with the destruction of their food, and the hunting grounds of the entomologist, though probably at no time very rich in this vicinity, becoming more and more restricted, and are soon destined to become a thing of the past.

It was with this fact in mind, and at the suggestion of several of my entomological friends, that I have undertaken this little paper. This list could not have been made as extensive as now presented, were it not for the efficient aid rendered me by Mr. James E. Cottle, whose long collecting experience here, and consequently his knowledge of the butterflies of the vicinity, has added much to this paper. Furthermore, his acquaintance with Dr. Behr resulted in his obtaining much valuable information which otherwise would have remained hidden to us.

The author believes that this list of diurnals is quite complete for the locality; a list of the heterocera of the same place, though hoped to be published by the writer, must be deferred for a future date as a work more important and difficult.

The Flora of San Francisco has been thoroughly worked out and listed by Mrs. K. Brandegee (Zoe, vol. 2, No. 4, pp. 334-386, 1892), but the butterflies only incompletely so by Dr. Behr in his "Fauna and Flora of California."

The climate of San Francisco is rather cool, with an abundance of sea fog and strong northwest winds in the summer time; the country immediately south of the city being likewise on the narrow peninsula much resembles it in physical aspect and otherwise; while to the north the higher and warmer elevations of Marin county, separated from San Francisco by the narrow straits, offer a greater variety of vegetation, more salubrious climate and many protected canyons free from fog for the richer insect fauna that inhabits the region.

The list given below contains the names also of those butterflies which once dwelt within the precincts of our city, but that at the present time are thought to be extinct here, or are so in fact.

1. **Danais plexippus** Linn.

Behr says of this butterfly (Fauna and Flora of Cal., Vol. 5, 2nd series, pp. 371-2, 1895): "Rare in the vicinity of San Francisco up to 1856, when suddenly great numbers appeared in the streets of San Franicsco. Since 1880 they have not visited the city." This butterfly is frequently seen in San Francisco, especially in the fall of the year, when it sometimes is, as at this writing (September, 1909), quite plentiful. The larva has been found in the nearby city of Oakland, and though it does not breed regularly in San Francisco, Dr. Behr reports finding a larva of this insect feeding on *Gomphocarpus curassavicus*, an exotic asclepiad which was growing in a garden.

2. **Brenthis epithore** Bdv.

Taken a good many years ago by Messrs. Cottle and Mueller in the commencement of Golden Gate Park, but not met with since.

3. **Melitaea chalcedon** Db. and Hew.

Still an abundant insect in many of those places where its food-plants *Scrophularia californica* and *Castileja latifolia* grow. Feeds also on *Diplacus glutinosus*. I have taken the butterfly as early as March, but here they are most abundant in April and May. One male was observed September 9, 1909. It is not destined to remain many years in San Francisco. Lone Mountain, Lands End, Presidio, Lake Merced, etc.

4. **Melitaea editha** Bdv.

This species has been taken here, but at present is not common.

5. **Melitaea palla** Bdv.

One male taken years ago in a garden by Mr. Cottle. Today it cannot be said to be a resident of San Francisco, though common in the vicinity.

6. **Phyciodes pratensis** Behr.

An abundant insect.

7. **Phyciodes mylitta** Edw.

Perhaps commoner than the preceding and like it on the wing from early spring till late autumn. I have on several occasions bred these butterflies from larvæ found feeding on the thistle, *Cirsium occidentale*. Lone Mountain, Lake Merced, Presidio, etc.

8. **Grapta satyrus** Edw.

I have several times seen in Golden Gate Park a *Grapta*, probably of this species, and on July 26, 1909, caught a worn female in a garden. It may breed at Lobos Creek and other places here where nettles are abundant.

9. **Vanessa antiopa** Linn.

Not uncommon.

10. **Vanessa californica** Bdv.

This erratic insect has been observed here, and in early times, when *Ceanothus thrysiflorus* grew in profusion, was probably not uncommon. Dr. Behr has taken migrants of this

species in San Francisco. It is usually common in Marin county, flying over the chaparral slopes of Mt. Tamalpais. Edwards has written an interesting article on this insect, describing its life history and remarking on its periodical abundance. (See Proc. Cal. Acad. Sciences, Vol. V, p. 123, 1875.)

11. **Pyrameis atalanta** Linn.

Cannot be said to be a rarity here.

12. **Pyrameis huntera** Fabr.

Strictly resident here and not uncommon. Larva on *Gnaphalium*, which flourishes in sandy localities of sufficient moisture.

13. **Pyrameis cardui** Linn.

This rapid flyer is quite common in certain locations, as Lone Mountain, where the larva feeds principally on *Cirsium occidentale*, but may also be found on *Lupinus arboreus, Malvaceae* and *Urticae*. Since its preferred food-plant is commonly found on the outskirts of the city proper, the butterfly is not usually taken in populous districts like the following species.

14. **Pyrameis caryae** Hbn.

The most common of the genus, and before the advent of *Pieris rapae*, perhaps the most characteristic butterfly of San Francisco. It is very commonly seen in gardens and public squares of the city, and is very fond of the blossoms of *Heliotrope*. It can be taken probably throughout the year, but, of course, most abundantly during the summer and fall. The larva, which varies in color, feeds on nettle and various plants of the *Malvaceae*, especially *Malva borealis*, which is of common occurrence in uncultivated districts, and a noxious weed in public squares.

The aberration *muelleri* described by Letcher is a seasonal form of striking aspect. As far as I am aware, this form invariably makes its appearance in late fall, when the cold weather is setting in, and which in a measure is probably responsible for the aberration. It is quite a rarity here, as it is

but seldom met with. I have but two specimens of *muelleri* in my collections; however, in the fall of 1904, Mr. Cottle captured seven fine examples of the aberration in his garden. Perhaps the best method of finding it is to pay regular visits in the fall to those parks where the ordinary *caryae* is abundant, and thus possibly two or three specimens of *muelleri* may be taken in half as many years.

15. **Junonia coenia** Hbn.

One specimen observed in the Lake Merced region September 9, 1909. Occasionally seen in Golden Gate Park, but probably only a visitor here.

16. **Limenitis lorquini** Bdv.

Occurs sparingly in the Lake Merced region.

17. **Heterochroa californica** Butler.

Occasionally seen. It probably breeds in the oak thickets.

18. **Satyrus sthenele** Bdv.

Dr. Behr says of this insect (Proc. Cal. Acad. Sciences; III, p. 163, 1864): "Is rather common near San Francisco, where it is found in June. Only one generation annually." Near San Francisco in 1864 is at present within the city limits. This insect, to the best of my knowledge, has not been taken here within the last 30 years or more. Mr. Cottle says that the locality given him by Dr. Behr as the habitat of *sthenele* is in Golden Gate Park, south of Strawberry Hill. This region, though quite grassy in places, has been much disturbed by man, and is now clothed for the most part with various trees, as *Pinus radiata, Acaciae,* etc. I believe the butterfly extinct here.

19. **Coenonympha california** Db. and Hew.

Have seen this insect quite close to the southern boundary line of the city, and Mr. Cottle says that it occurs south of Golden Gate Park, where there are many apparently suitable localities for it.

20. **Thecla melinus** Bdv.

I took one example of this Hair-streak at Lake Merced. It has several times been observed in the city.

21. **Thecla iroides** Bdv.

Has been observed by Mr. Cottle in a nursery in the northern part of the city. It is very common across the bay in Marin county.

22. **Thecla dumetorum** Bdv.

A common insect occupying a considerable area in the western portion of the city. Its larval food-plant here is *Eriogonum latifolium,* which is very common in sandy places. During June and July of this year I collected a number of larvæ of *dumetorum.*

Mature larva—Length (at rest) 13 mm., width 4.5 mm. Head small, deeply retracted into seg. 1, pale subhyaline brownish, with the base of the antennae and a strip above labrum whitish. Body quite stout, slug-shaped, well ridged, somewhat concave subdorsal and rather depressed at posterior extremity, segmental incisions deep; ground color quite variable (as is often the case in the *Lycaenidae*), usually rather pale bluish green or dull translucent pale grayish green. Dorsal line inconspicuous, a little paler than ground. From segs. 2-9, inclusive, the ridge on each side of the dorsum is topped with a coral red blotch (sometimes practically obsolete), which is enclosed by the whitish or pale grayish-white, broken ridge stripe, a part of which also runs through this blotch dividing it into the more conspicuous inner and the more obscure outer portion. The blotch is most pronounced at about seg. 4. The ridge stripe is subtriangular on each segment, parallel with the dorsal line on its inner side and sloping obliquly ventrad and caudad exteriorly. An oblique sublateral, dark green dash, plainest on the anterior portion of the segments and sometimes obsolete on their latter half or more. Lateral stripe whitish, distinct, extending from seg. 2 to end of body, in heavily marked specimens this stripe is bordered above and below by purplish. A strong sublateral fold. Cervical shield behind and often partly hidden by a bilobed fold, subquadrate, rose color or whitish, with rather sparse, little ring-like tubercles, some piliferous. Feet pale greenish gray, brown tipped. Body somewhat thickly clothed with rather smooth, stout, short pile of pale brown color with darker tips and arising from small plain tubercles. This pile is not of uniform length.

In another larva the ground color is bright green, the dorsal blotches are rusty red in a broad broken yellowish-white stripe, lateral stripe yellowish-white with coral red borders, cervical shield rose color. Other larvae are pale green and fewer rose color. In one specimen the color is almost wholly coral red and rose and light grayish green ventrad.

Described from living specimens.

Pupa.—Length 10.75 mm., width above the middle of the abdomen 5.85 mm.; quite broad and stout, abdomen wider than high; dull brownish black, making the coloration almost uniform, in some specimens, however, the color is brownish mottled with blackish; stigmata brownish with pale yellowish rim. Body somewhat shining, quite roughened, indistinctly reticulate, well clothed with pale translucent brownish hairs of fair size, mostly pointed, often slightly clavate, and beset with short little spines, giving the hairs a roughened appearance. The hairs arise from small inconspicuous buttons.

Described from living specimens.

The larva of this butterfly, though often of various shades, mimics well the flower heads of the buckwheat; reclining as it does among the pale grayish-green and coral red colors of the flower it is often overlooked, though when once noticed the mimicry does not seem so strong and the larva is conspicuous enough. The larva of *Lycaena behrii, antiacis* and some others girdle themselves quite strongly, differing thereby from *Thecla dumetorum,* which girdles itself imperfectly, if at all, and pupates largely in rubbish, in contradistinction to the more exposed pupation of the former. None of my *dumetorum* pupæ have as yet emerged, and it is probable that it passes the winter in the pupal state.

23. **Chrysophanus helloides** Bdv.

Not uncommon in places where its food-plant grows. Lone Mountain, Presidio, Mountain Lake, Lake Merced, etc.

24. **Lycaena heteronea** Bdv.

Not found here at present. The locality given by Behr is the hilly region in the vicinity of Mountain Lake.

Mature larva.—Length (at rest) 18.25 mm., width above middle 6 mm.; pale translucent ultra ash gray, or with a slight greenish tinge, very nearly the color of the dorsal surface of its food-plant (*Eriogonum* sp.); ordinary onisciform, though slenderer than the larva of *Lycaena antiacis, behrii* or *Thecla dumetorum;* rather rounded and somewhat thickly clothed with rather smooth slender white pile and less numerous little white dots, which under the microscope appear as ovoid tubercles with constricted bases. Under the naked eye the larva presents a rather fuzzy aspect; segmentation not as distinct as in *Thecla dumetorum;* markings quite obscure. A pale ground color line on each side of the median one, then two more or less oblique

ones of the same color. In the spiracular area the ground seems somewhat darker. Stigmata pale yellowish with a narrow, brownish rim. Lateral line (which is the plainest of the markings) whitish. A slight indication of purplish at cephalic end of the largest specimen (described). I could find no indication of caudal cornicles for honey dew. A very sluggish larva.

Described from several living specimens in the final instar, taken in Marin county, May 23, 1909.

Pupa.—Length 12 mm., width at abdomen 5.30 mm.; stout; thorax rather high and humped, rounded; head gently rounded. Markings obscure, coloration pretty uniform, light green, pale greenish gray on wing covers, and most distinctly greenish on abdomen; reticulated with grayish white, this latter color being distributed in about the same proportion as the ground color. Pale green dorsal thoracic line, with blackish where it meets the abdomen line, more obscure on abdomen where it is plainest caudad. Some small, darker greenish subdorsal spots, hardly in a depression. Stigmata obscure, cream color. An ill-defined pale greenish lateral stripe. Wing venation marked by very pale grayish white. An irregular ventral circle of rusty brown crotchets. The raised reticulated surface is quite fine, in contradistinction to that of *Thecla dumetorum*. With the exception of the wing covers the pupa bears numerous little white spots, which, under the microscope are defined as little short-peduncled stellate discs. A smaller pupa is more heavily marked.

Described from living material.

The pupæ were fairly well girdled and produced imagoes in June and July of the same year.

25. **Lycaena pheres** Bdv.

Not uncommon in May and June in the vicinity of *Lupinus chamissonis,* upon which the larva feeds. This butterfly is subject to considerable variation on the underside of the wings. It is sometimes confounded with *L. fulla* of the mountains.

26. **Lycaena xerces** Bdv.

Quite rare, though formerly an abundant insect. Lone Mountain, Lake Merced, etc.

27. **Lycaena antiacis** Bdv.

I have given the life-history of this insect in Entomological News, Vol. XIX pp. 476-482, 1908. This form is more

abundant than the preceding, but is found with it. Like *pheres* it seems doomed to be never understood by many Lepidopterists.

In Great Britain, as I am informed by a correspondent, *Chrysophanus astrarche,* Bgstr, with its variety *artaxerxes,* F. has in the one, eye-spots on the wings, beneath, with heavy black pupils, while in its var. the white spots are without pupils. He further informs me that in Durham, the same batch of eggs will produce both of these forms and also an intermediate. This European insect, therefore, would seem to bear much the same analogy to *L. autiacis, xerces* and the intermediate *mertila,* only in the latter case the test of breeding has not been sufficiently applied.

28. **Lycaena sagittigera** Feld.

Mr. Cottle tells me that he took one specimen of this handsome blue years ago, at Mountain Lake, near the Marine Hospital. None have been taken since.

29. **Lycaena enoptes** Bdv.

Dr. Behr says (Proc. Cal. Acad. Sci., Vol. III, p. 282, 1867) that it is "to be found on the hills near Mission Dolores and in the San Bruno Hills. The species is rather scarce." I have taken one male at Lone Mountain in about 1902. None seen since.

30. **Lycaena acmon** Db. and Hew.

Still quite common and widespread and enjoying a long season. Larva on *Lotus glaber* and *Eriogonum latifolium* and other species. The fall brood of *acmon* is common in September.

31. **Lycaena piasus** Bdv.

Occurs in the Lake Merced region and probably also at Lobos Creek. Wanders occasionally into the city. Very common in the San Francisco Bay region.

32. **Pieris napi** Esper.

The forms *venosa* Scudder and *castoria* Reak. have been observed at Lobos Creek. Uncommon.

33. **Pieris rapae** Linn.

A very common butterfly in and about San Francisco, and quite a garden pest, its larva devouring the leaves of the cultivated *Nasturtium, Mignonette* and a host of others. In the fall of the year pupae are numerous along garden fences, walls, etc. In the southern parts of San Francisco where cabbages are grown extensively, scores of these "Whites" may be seen flying over the fields. Here the insect is probably triple-brooded, and on warm winter days an occasional adult may be seen. I well remember the time when *rapae* was scarce about the streets of the city; at present it is more abundant than *Pyrameis caryae.*

34. **Anthocharis sara** Bdv.

Described from a specimen taken in San Francisco, where it is at present rare or extinct.

35. **Colias eurytheme** Bdv.

This insect, with its several forms is quite abundant in the undisturbed districts. I have reared adults from larvae feeding on *Lotus glaber.*

36. **Meganostoma eurydice** Bdv.

This insect probably never inhabited the city, and I mention it merely because I took a female on the ocean beach west of San Francisco, being evidently blown across the straits from Marin County where it is common enough locally.

37. **Papilio philenor** Linn.

Not uncommon in the Lake Merced region where *Aristochia californica* grows. It is very common in Marin and Sonoma Cos.

38. **Papilio zolicaon** Bdv.

Is a resident of San Francisco where it is scarce however. I have noticed its larva here on one occasion feeding on a large Umbellate.

39. **Papilio rutulus** Bdv.

Observed by Mr. Cottle in the Lake Merced region where it is scarce or extinct at present.

40. **Papilio eurymedon** Bdv

Same distribution as *rutulus* and at present probably extinct here. The climate of San Francisco is probably too cool for these two species, and properly wooded land lacking.

41. **Pamphila juba** Scudd.

Taken by Mr. Cottle in a marshy area at Mountain Lake. May perhaps be still found there.

42. **Pamphila sabuleti** Bdv.

A very common insect and frequently seen in gardens and public squares. The larva, as is well known, feed on grasses, and as lawns are quite plentiful in the midst of the city, this little insect has no difficulty in maintaining a secure existence here. It is quite generally distributed over the western half of the city. The females vary much in intensity of coloration.

43. **Pyrgus tessellata** Scudd.

Quite plentiful. The larva feeds on *Malva sp.* and probably also on *Sidalcea.*

44. **Thanaos propertius** Lint.

Not common at present. Probably breeds in the oak thickets.

RESUMÉ.

Of the 43 species of butterflies given as inhabiting San Francisco at one time, probably not more than 30 could now be taken in the course of several seasons, and a newly arrived lepidopterist might well be surprised on learning that such butterflies as *A. epithore, S. sthenele, L. heteronea* and *sagittigera* formerly dwelt here. Furthermore, it is quite possible that such species as *C. xanthoides, L. amyntula, P. occidentalis, P. nemorum* and others flew in this region.

Before a decade has passed away there will be but little left of the insect fauna of our city, and therefore the importance and necessity of making local insect lists while the fauna is still extant and in an undiluted condition, cannot be too much emphasized.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JANUARY, 1910.

We said in a previous number that we thought it likely that the review of the literature that we formerly gave would be continued. In this number it has eventuated. The trouble has been to get someone who loved entomology and entomologists enough to do this work. In the first volume of the NEWS, in the first two numbers, these reviews are signed E. M. A. Since that time a number of martyrs to the cause have spent good hours at the work. There is no doubt of the great value of a monthly review of the literature, but how often do those using it think of the person who has compiled it as a labor of love. At the present time we are fortunate in having a case of avatism in our midst. The gentleman who is conducting the Department of Literature at the present time undoubtedly inherited his entomology, as his grandfather was one of the founders of the American Entomological Society and its first meeting was held in his father's home. We are very grateful for the many kind letters received in regard to the increase of price for the present volume and the very great interest shown in the News and its future.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology, excluding Arachida and Myripoda, of the Americas (North and South). Articles irrelevant to American entomology, unless treating of new genera, will not be noted. Contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in heavy-faced type refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted.

4. The Canadian Entomologist, London, Ont.—**7.** U. S. Department of Agriculture, Bureau of Entomology Bulletin.—**9.** The Entomologist, London.—**10.** Nature, London.—**13.** Comptes Rendus, Societe de Biologie, Paris.—**15.** Biologia Centrali-Americana, London.—**18.** Ottawa Naturalist.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec.—**38.** Wiener Entomologische Zeitung, Vienna.—**45.** U. S. Department of Agriculture, Bureau of Entomology Circular.—**50.** Proceedings, U. S. National Museum, Washington. —**58.** Revista Chilena de Historia Natural, Santiago.—**72.** Transactions, Kansas Academy of Science, Topeka.—**81.** Biologisches Centralblatt, Erlangen.—**89.** Zoologische Jahrbucher, Jena.—**92.** Zeitschrift fur wissenschaftlione Insektenbiologie, Berlin.—**101.** Rovartani Lapok, Budapest.—**143.** Ohio Naturalist, Columbus.— **153.** Bulletin, American Museum of Natural History, New York.— **158.** Gardenflora, Berlin.—**159.** Bolletino, Laboratorio di Zoologia Generale e Agraria della R. S. Superiore d'Agricoltura in Portici.— **161.** Proceedings, Biological Society of Washington.—**162.** Papers, American Society of Tropical Medicine.—**163.** American Journal of Science, New Haven, Conn.—**164.** Bulletin, University of Kansas, Lawrence.—**166.** Internationale Entomologische Zeitschrift, Guben.—**167.** O Entomologista Brasileriro, S. Paulo.—**169.** "Redia." R. Stazione di Entomologia Agraria in Firenze.—**170.** Zoological Press Bulletin, Division of Zoology, Pennsylvania Dept. of Agriculture, Harrisburg.—**171.** The Museums Journal, London, —**172.** The American Museums Journal, New York.

GENERAL SUBJECTS.—Anon. Insectos uteis. Criacao de besouros para alimentacao de aves domesticas.—**167,** ii, 299. Nomenclature of types (note), **171,** ix, 222.—**Cockerell, T. D. A.** Fossil insects from Florissant, Col.—**153,** xxvi, 67. A catalogue of the generic names based on American insects and Arachnids from the Tertiary rocks, with indications of the type species.—**158,** xxvi, 77.

—**Hoffmann, F.** Ueber ein praktisches, billiges and vietseitig verwendbares paupenzuchtgefass, **166,** iii, 217.—**Lucas, W. J.** Natural orders of insects (note), **9,** xlii, 293.—**Morris, F. J. A.** Some guests at the banquet of blossoms, **4,** xli, 409.—**Prochnow, O.** Der erklarungswert des Darwainismus und Neo-Lamarckismus als theorien der indirekten zweckmassigkeilserzeugung, **166,** iii, 170, 254. Entomologie und tierschutz, **166,** iii, 325.—**Rohwer, S. A.** Three new fossil insects from Florissant, Col., **163,** xxvii, 533.—**Tucker, E. S.** Additional results of collecting insects in Kansas and Colorado, **72,** xxii, 276, 396.—**Withington, C. H.** Insect types and cotypes. A preliminary list of those in the Francis Huntington Snow Entomological Collection.—**72,** xxii, 327.

ECONOMIC SUBJECTS.—Anon. Economic Entomology in the U. S., **10,** lxxxii, 108. As Nossas florestas a primeira estacao biologica na America meridional . . . **167,** ii, 289.—**Chittenden, F. H.** The parsnip leaf-miner (*Acidia frabria* Lw.).—**7,** No. 82, 9. The celery caterpillar (*Papilo polyxenes* Fab.).—**7,** No. 82, 20. The parsley stalk weevil (*Listronotus latiusculus Boh.*), **7,** No. 82, 14.—**Hopkins, A. D.** Insect depredations in North American forests and practical methods of prevention and control, **7,** No. 58, 57.—**Ihering, H. von.** As brocas e a arboricultura, **167,** ii, 294.—**Leonardi, G.** Altre notizie intorno alla *Diaspis pentagona* Targ. ed al modo di combatteria, **159,** iii, 121.—**Manget, J. D.** *Dermatobia nozialis* infection; report of a case contracted in So. Mexico, **161,** iv.—**Phillips, W. J.** The slender seed-corn ground-beetle (*Clivina impressiformis* Lec.), **7,** No. 85, 13.—**Sanders, J. G.** The euonymus scale (*Chionaspis euonymi* Comst.), **45,** No. 114.—**Skinner H.** The relation of house-flies to the spread of disease (with bibliography), **162,** iv.—**Surface, H. A.** Making the lime-sulphur wash.—**170,** No. 33. Dealing with the wolly aphis.—**170,** No. 33. About diagnosing tree ailments.—**170,** No. 34. Cost of spraying outfit.—**170,** No. 34.—**Webster, F. M.** Aphides on gladiolas.—**4,** xli, 424.—The lesser clover leaf weevil (*Phytonomus nigrirostris* Fab.).—**7,** No. 1.

NEUROPTERA.—Buffa, P. Contribuzione alla conoscenza dei Tisanotteri (Due nuovi generi di Tubuliferi.—**159,** iii, 194. I Tisanotteri esotici esistentinel useo civico di storia naturale di Genova. **169,** v, 158.—**Enderlien, G.** Neue gattungen und arten nordamerikanischer Copeognathen, **159,** iii, 329.—**Guercio, G. del.** Contribuzione alla conoscenza dei Lachidi italiani. Morfologia, sistematica biologia generale e loro importamza economca.—**169,** v. 173,

ORTHOPTERA.—Borelli, A. Forficole raccolte dal Prof. F. Silvestri nell' America settentrionale e nelle isole Havvaii, **159,** iii, 315.—**Griffini, A.** Sulla *Gryllacris rubrinervosa* Serv. con appunti sul gene *Dibelona* Brun, e sulle *G. americane.*—**169,** vi, 183.

HEMIPTERA.—Ball, E. D. Some remarkable new leaf hoppers of the family Fulgoridae, **161,** xxii, 197.—**Banks, N.** The family name Lygaeidae, **4,** xli, 418.—**Dean, G. A.** Coccidae of Kansas, **72,** xxii, 265.—**Glenn, P. A.** Influence of climate on the green bug and its parasite, **164,** ix, 165.—**Hunter, S. J.** The green bug and its enemies. A study in insect parasitism.—**164,** ix, 221.

LEPIDOPTERA.—Bastelberger, Dr. Ein neues genus und neun neue Afrikanische Geometriden aus meiner sammlung, **166,** iii, 225.—**Braun, A. F.** Phylogeny of the Lithocolletid group. (A preliminary survey), **4,** xli, 419.—**Martelli, G.** Contribuzioni alla conoscenza della *Dioranura vinula* Linn. e di alouni suoi parassit, **159,** iii, 239.—**Rothschild, N. C.** Beitrage zur Lepidopteren fauna Ungarns, **101,** xvi, 139.—**Taylor, G. W.** Note on *Sphinx perlegans* H. Edw. in British Columbia.—**4,** xli, 423. The Eupitheciae of Eastern North 'merica, No. 3, **4,** xli, 425.—**Wolly-Dod, F. H.** Discourses upon the Lepidoptera II. Familiarity with local forms, **18,** xxiii, 144.

DIPTERA.—Bezzi, M. Eine neue Empidide aus Paraguay.—**38,** xxviii, 319. Le specie dei generi *Ceratitis, Anastrepha* e *Dacus,* **159,** iii, 283.—**Cockerell, T. D. A.** Fossil Diptera from Florissant, Col., **153,** xxvi, 9.—**Cholodkovsky, N.** Zur kenntnis des weiblichen geschlechtsapparatus der Musciden, **92,** v, 333.—**Lutz, F. E.** Experimental work with pomace flies, **172,** ix, 234.—**Portier, P.** Physiologie de l'appareil respiratoire des larves d'Oestre, **13,** lxvii, 568.—**Rothschild, N. C.** A new species of *Stephanocircus* from Chili, **58,** xiii, 181.—**Silvestri, F.** Descrizione e cenni biologici di una nuova specie di Asphondylia dannosa al lupino, **159,** iii, 1.—**Villeneuve, J.** Variations chez quelques Dipteres Tachinaires, **38,** xxviii, 333.

COLEOPTERA.—Chagnon, C. Les Buprestides de la province de Quebec, **37,** xxxvi, 145.—**Champion, G. C.** Curculionidae (continued), **15,** Coleoptera, iv, pt. 7, 1-48.—**Pic, M.** Supplement a la liste des Coleopteres de la Guadeloupe. Ptinides et Anobiides, **89,** lxxviii, 166.—**Pierce, W. D.** Studies of North American weevils, **50,** xxxvii, 325.—**Raffray, A.** Nouvelles especesde Pselaphides, **89,** lxxviii, 15.—**Reitter, Edw.** Neue Coleopteran aus der palaarktischen fauna, **38,** xxviii, 303.—**Sicard, A.** Revision des Coccinellides de la faune Malgache. II. Coccinellidae Aphidiplagae, **89,** lxxvii, 63.—**Weise, J.** Eine neue Coccinellide aus Mexico.—**159,** iii, 205.

HYMENOPTERA.—Beutenmuller, W. The species of *Holcaspis* and their galls, **153,** xxvi, 29.—The species of *Amphibolips* and their galls.—**153,** xxvi, 47. The North American species of *Diastrophus* and their galls.—**153,** xxvi, 135. The species of *Biorhiza, Philonix* and allied genra and their galls.—**153,** xxvi, 243. Some North American Cynpidae and their galls, **153,** xxvi, 277.—**Brethes, J.** El jenero *Pepsis* en Chile, **58,** xiii, 201.—**Cockerell, T. D. A.** Notes upon vari-

ation of *Melissodes lupina* Cresson, **72,** xxii, 305.—**Gahan, A. B.** A new species of Pteromalidae, **4,** xli, 431.—**Hewitt, C. G.** Tent-building habits of ants, **143,** xxiii, 168.—**Marnamara, C.** Ant roads, **18,** xxiii, 150.—**Masi, L.** Contribuzioni alla conoscenza dei Calcididi Italiani, **159,** iii, 86.—**Silvestri, F.** Appunti sulla *Prospalta berlesei* How. e specialmente sui primi stati del suo sviluppo.—**159,** iii, 22. Contribuzioni alla conoscenza biologica de gli Imenotteri parassiti II-IV, **159,** iii 29.—**Vachal, J.** Sur le genre *Melitoma* S. F. et Serv. et sur les genres voisino de la sous-famille Anthophorinae, **86,** lxxviii, 5.—**Wasmann, E.** Ueber den Ursprung des sozialen parasitismus der Sklaverei und Myrmekophilii bei den Ameisen, **81,** xxix, 683.—**Wheeler, W. M.** Ants collected by Prof. F. Silvestri in Mexico, **159,** iii, 228.—**Withington, C. H.** Habits of parasitic Hymenoptera II.—**72,** xxii, 314.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE November number of "The Border," published at Phoenix, zona, contains a very interesting sketch of Dr. R. E. Kunze, the entomologist and botanist. The title of the article is "The Cactus Man."

"My little dog has fleas," the woman cried.
"Do give me something that will cure them, please."
And then the silly drug store clerk replied:
"What seems to be the matter with the fleas?"

THE coming summer promises to be a very interesting one in Europe. The First International Entomological Congress will be held in Brussels from the first to the sixth of August. At this time the International Exposition will be held in the same city.

MORE UNNATURAL HISTORY.—"The sting of some insects will kill a gold fish in almost every instance. 'Snake feeders' and other insects fly close to the water in summer, and, when the tiny fish rise to the surface of the pond, as is their habit, an egg is laid, or a sting inserted, by one of these watchful insects. Either of these inflictions is fatal."—"The Popular Magazine," October, 1909, page 89.

THE United States Post Office Department has promulgated a new rule concerning mailing privileges for second class matter. This rule, which is reasonable and proper, provides that all subscriptions not paid for within a reasonable time shall be denied the second class mailing privilege. Kindly assist us in complying with the post office regulations by remitting promptly.

TWO COCCIDAE NEW TO COLORADO.—We are indebted to Mr. L. C. Bragg for specimens of two species of Coccidae new to the Colorado list, one a native, the other introduced and only occurring under glass. (1) *Targionia helianthi* (Parrott). On *Artemisia dracunculoides* (a new food-plant). Fort Collins, 1909. (2) *Diaspis zamiae* Morgan. On *Cycas* in greenhouse. Fort Collins, 1909.—T. D. A. COCKERELL AND L. H. FALK.

THE Eighth International Zoological Congress will be held in Graz, Austria, August 15 to 20, and all persons interested in Zoology are invited to become members of the Congress. The meetings will be held in the great Stephaniensaal and there will be interesting excursions to Erzberg and the Leopoldstein See. Trieste and possibly to the Royal Castle of Miramar. Also special excursions to Dalmatia, Bosnia and Herzegovina.

WITH reference to Mr. Banks' note on the date of Guérin's "Iconographie du Règne Animal," the correct date of the text is 1844. In a letter from Adam White dated London, January 9, 1845, and published in the "Annals and Magazine of Natural History" XV. 119, he writes: "I have seen, for the first time, the text to Guérin's admirable 'Iconographie du Règne Animal' (a work which on the title-page bears the date of 1829-38, although I see on the *wrapper* it was not finished till 1844, through some mistake of the printer [?]." It is therefore evident that the text was actually published in 1844. The plates had been issued some time previously and were cited by the contemporary writers. —G. W. KIRKALDY.

DURING January and February the address of Mr. John A. Grossbeck will be in care of Dr. William Barnes, Decatur, Illinois. Correspondents please take notice.

A FULL size specimen of *Thysania zenobia* was taken at Louisiana, Mo., November 10, 1909. It was resting on a board, with its wings flat against the surface, and from the appearance of the hind wings was quite fresh; but, unfortunately, the boy who brought it to me carried it by the tip of one fore wing, and, in its struggles to escape, it had ruined both wings. Isn't it unusual to take this moth so far north?—R. R. CROWLEY.

NOTE on Dryaphthorus bituberculatus Fab.—As the above species is still retained in Prof. S. Henshaw's list of North American Coleoptera, a note of correction may not be amiss. If I am rightly informed, California has been given as its habitat. However, to the best of my knowledge, it does not exist in any of our collections of North American Coleoptera and is not likely ever to occur within our faunal limits. In a rather large series of Rhynchophora from New Zealand

obtained from Captain Thomas Brown, author of a Manual of New Zealand Coleoptera is a specimen of the species under consideration. It lives according to this author* in the wood of the Kauri *Dammara australis*—and is placed by him among the Cryptorhynchidae and referred to *Mitrastethus* Redt.† It should be eliminated from our list.—W. G. DIETZ, M. D.

Doings of Societies.

The fifty-fifth regular meeting of the Hawaiian Entomological Society was held in the library of the Hawaiian Sugar Planters' Experiment Station September 9, 1909.

Mr. Swezey presented a generic synopsis of Hawaiian Microlepidoptera.

Mr. Fullaway exhibited a collection of insects recently collected on Molokai and read notes on same.

Mr. Terry presented notes on *Syritta oceanica* (Dip.).

Mr. Kirkaldy reported the Mantid *Tenodera sinensis* from Kohala, Hawaii.

Mr. Kotinsky exhibited a *Pseudococcus,* possibly new, from Tantalus, Oahu.

DANIEL B. KUHNS, *Secretary.*

The fifty-sixth regular meeting of the Hawaiian Entomological Society was held in the library of the Hawaiian Sugar Planters' Experiment Station October 7, 1909.

Mr. Kirkaldy exhibited a series of Scutellerine bugs of several species to show the color variation.

Mr. Swezey exhibited specimens and gave descriptions and notes on life history of some new Hawaiian Lepidoptera.

DANIEL B. KUHNS, *Secretary.*

The fifty-seventh regular meeting of the Hawaiian Entomological Society was held in the library of the Hawaiian Sugar Planters' Experiment Station November 4, 1909.

Mr. E. M. Ehrhorn was elected to regular membership and

*—Op. cit. p. 504.

† Voy. Novara.

Dr. R. C. L. Perkins, Dr. David Sharp and the Rev. Thomas Blackburn were elected honorary members.

The Popular Names Committee presented their report on the common names of insects.

Mr. Ehrhorn described and exhibited a new method of mounting Coccidæ, a beautiful bunch of strung "earth pearls," *Magarodes trimeni* Giard (Coccid), also a box containing typical specimens of each family of the beetles of the United States north of Mexico.

Mr. Kotinsky read a very interesting paper on the Sugar-cane Mealy Bug; he also read a note from Brother M. Newell reporting the appearance of the Curculionid *Syagrius fulvitarsus* Pasc. in a fernery in Hilo. The insect has been known in Honolulu for sometime, but this is the first record from Hilo.

Messrs. Fullaway and Kotinsky presented notes and descriptions of *Rhiperziella rhizophilla* n. sp. (Coccid).

Mr. Swezey read a note on *Rhiparobia madeira* (Orth.); and exhibited a collection of insects made on a recent trip in the Waianae Mountains.

DANIEL B. KUHNS, *Secretary.*

At a regular meeting of the Feldman Collecting Social held October 20, 1909, at 1523 South Thirteenth Street, Philadelphia, eleven members were present, Mr. Grossbeck, of New Brunswick, N. J., visitor. President Harbeck in the chair.

Mr. Grossbeck read a paper on *Culex perturbans,* Walk., by Prof. Smith.

Mr. Daecke said since last meeting, when he mentioned having bred *Pyrausta laticlavia* G. and R. from Horsemint, *(Monarda punctata* L), he has bred *P. signitalis* Walk. from same species of plant. Same speaker exhibited *Melanoplus punctulatus* Scud., a rare species of Orthoptera, a ♀ taken while ovipositing in the trunk of a pine tree about four feet above the ground; the abdomen was so far in the wood that the tree touched the base of the hind legs. Said on June 27 while at Englenook he sat down to rest in a place where "skippers"

(*Eudamus tityrus* Fabr.) were common. One flew on his hand where he noticed it was acting in a peculiar manner and upon watching it he found it would touch the tip of its abdomen to his hand where it would deposit a drop of liquid then with its proboscis would suck this up and then repeat the operation. Thought it did this to dissolve the salts on the skin from the perspiration. Tried the same experiment with *Argynnis cybele* Fabr., but failed.

Mr. Wenzel described how he found several species of Coleoptera in New Jersey on *Tephrosia virginia* (Ch.) at different stages of its growth. Also exhibited his collection of *Lycus* containing seven or eight species from the West, each of which is very closely mimicked by a small moth, and a box containing about forty species of Coleoptera, all new and collected on the Kaeber-Wenzel Expedition to the Huachuca Mountains of Arizona. Specially mentioned a new genus and species, *Anoplocephalus cribrifrons,* described by Schaeffer, a new *Euphoria,* two species of *Brachys* and three of *Agrilus.* Said they had found a species of *Coptocycla* common on a certain vine and when Schaeffer had visited this same vine two years before he found another species of *Coptocycla* common, but none of the other.

Mr. Grossbeck mentioned, in connection with what Mr. Wenzel had said about *Coptocycla,* a certain pool in Great Peace Meadows of New Jersey showing how species will disappear and be replaced by others. The first year it was visited it contained thousands of larvæ of *Culex canadensis* Theo., the second year *C. pretans* Grossb. only, the third year *C. abfitchi* Felt only, and the fourth there were some of each.

Mr. Harbeck exhibited a freak Teuthredinid, with four branches to its antennæ; on one side the branches join about half their length and continue as one while the other two branches are perfect for their entire length. The specimen was taken at Trenton, N. J., viii, 23, 1909.

Adjourned to the annex.

GEORGE M. GREENE, *Secretary.*

EXCHANGES.

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Exotic butterflies given in exchange for stamp collection or unused current issue your locality.—Geo. Rossiter, 618 Queen E, Toronto, Can.

Eggs—Would like to buy eggs of Sphingid and Saturnid moths or of any other large moth. Please mention food plants and price. Will not pay more than 5c. per doz.—S. L. Wright, Jr., Bay Head, N. J.

Indian and Venezuelan butterflies to exchange for others. Desire large and showy North American and Mexico.—George Rossiter, 618 Queen E, Toronto, Canada.

Living pupae and cocoon wanted of the following for cash or exchange from one to one hundred of each species: *A. luna, C. imperialis, regalis, dictynna, jorulla, orizaba, splendida. gloveri, calleta, columbia, californica, angulifera, C. pandora,* any *Sphinx,* any *Papilio* and eggs of any Catocalae.—A. F. Porter, Decorah, Iowa.

Wanted—All kinds of pupae and cocoons from North America and Mexico, either for cash or good exchange.—Herman H. Brehme, 74 13th Avenue, Newark, N. J.

Cocoons—*S. cynthia* to exchange for *S. cecropia, C. promethia, T. polyphemus* and other pupae or Lepidoptera in papers.—John H. West, 2229 N. Mascher St., Phila., Pa.

Wanted for cash or exchange, 2 female and 2 male *Arg. diana;* must be in perfect condition to be acceptable. I have many specimens in papers to exchange.—G. H. Hosenfelt, 3673 S. Broadway, St. Louis, Mo.

Saturnidae—Have always for exchange ova, cocoons or set imagines of Japan, Africa, Ceylon, India and Malayan Saturnidae as *Attacus edwardsi, Actias selene, Caligula japonica, simla* and a new species of *Cricula.* Wanted live cocoons or ova Central American and Mexican *Attacus,* also *luna, colombia, calleta* and *shastaensis.* Old correspondents invited to write.—J. Henry Watson, 70 Ashford Road, Withington, Manchester, England.

I have for exchange eggs of *Catocala cara, vidua, piatrix, scintillans* and, on pins, imagoes of *illecta, innubens, robinsoni, vidua* and others. Wish imagoes of *Marmorata viduata, junctura,* etc.—R. R. Rowley, Louisiana, Mo.

Dytiscidae wanted by exchange or purchase Henshaw's numbers 1236, 1239, 1241, 1260, 1271, 1272, 1307, 1311, 1336, 1337, 1341, 1351, 1363, 1373, 1376, 1398, 1407, 1416, 1429, 1450, 1453, 1456, 1070, 1471, 1500, 1503, 1504.—John D. Sherman, Jr., 335A, Decatur St., Brooklyn, N. Y.

Offered—Fine *Parn. apollo, delius, mnemosyne, Arg. paphia, A. aglaia, lathonia, Lyc. coridon, semiargus* and other butterflies. Wanted pupae of Papilios *S. geminatus, astylus, excaecatus, cerisyi, myops,* cocoons of *gloveri,* etc.—J. W. H. Harrison, 181 Abingdon Road, Middlesbro, England.

Coleoptera—Many rare species from the Arkansas Valley, Kansas.—J. C. Warren, Mt. Hope, Kansas.

Coleoptera exchanged for species not represented in my collection. Endomychidae and Erotylidae especially desired.—R. J. Crew, 561 Carlan Ave., Toronto, Canada.

Exchange—Living pupae of *M. modesta, Sph. chersis, A. bicolor, Pap. cresphontes, Pap. asterias* for native or exotic Lepidoptera.—A. Mares, 2517 Homan Ave., Chicago, Ill.

Wanted in exchange, perfect specimens of the genus *Parasemia*, *Apantesis* and allied groups, also Pieridae and *Catocala*. List of duplicates will be sent on application; also want eggs of *Catocala* for cash or exchange.—M. Rothke, 835 Mathew Ave., Scranton, Pa.

Lepidoptera—Pupae of *cresphontes* and *troilus* to exchange.—F. Malkmus, 3735 Cottage Ave., St. Louis, Mo.

Lepidoptera—I have for exchange first-class *Catocala epione, lacrymosa, paulina, evelina, retecta, luctuosa, flebilis, robinsonii, curvata, obscura, residua, insolabilis, angusi, lucetta, ultronia, innubens, hinda, scintillans, nebulosa, palaeogama, anida, phalanga, habilis, basilis, cerogama, parta* ahd others. Wish *agrippina, subviridis, californica, frenchii, portia, aspasia, rosalinda, mariana, faustina* and *aholibah*.—Ernst Schwarz, 6310 Newstead Ave., St. Louis, Missouri.

I collect for cash. Locals only. Unique field. Price lists 2 cts. *Buprestis apricans*, 25; *Bradycinetus ferrugineus*, 35; *Dynastis tityrus*, 35; *Sandalus niger* ♀, 15. Red ♂, 25; black ♂, 20, etc.—A. H. MANEE, Southern Pines, N. C.

Papiliaj kokonoj, interŝanĝe. Mi deziras ricevi interŝanĝe, du specimenojn de la skarabo (*Prionus giganteus*) por kvina specoj de la pli grandaj papiliaj kokonoj de Norda Ameriko.—Howard Austin Snyder, Hermit Lane, Roxborough, Philadelphia.

Catocalae—Wanted for exchange or, preferably, cash, *sappho, marmorata* and southern and western species. Must be in fine condition.—Dr. Hermann Bosch, 25 East 65th St., New York.

Lepidoptera—I have for sale or exchange living pupae of *Papilio turnus, triolus, cresphontes; S. chersis, luscituosa, modesta, quinquemaculata, achemon, undulosa, cecropia, polyphemus, promethia*, and many others as well as imagos. Want pupae of others not in my collection.—John Kythica, 1347 S. Scoville Ave., Oak Park, Ill., U. S. A.

Lepidoptera—Catocala wanted, particularly *sappho* and *marmorata*.—Dr. Hermann Bosch, 25 East 65 St., New York.

Wanted—For cash or exchange, pupae of all Sphingidae and Saturnians, also ova of Catocalae. Offer many rare North American and European Lepidoptera.—J. McDunnough, Decatur, Ill.

If you desire exchanges in North American and Exotic Lepidoptera, to our mutual advantage, please send me your address.—Paul A. Schroers, 3807 Folsom Ave., St. Louis, Mo.

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